THE CHEMICAL AGE

VOL. LXXI 28 AUGUST, 1954 No. 1833

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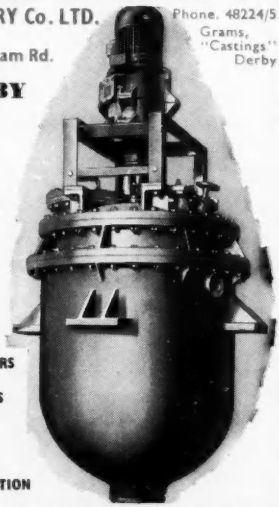

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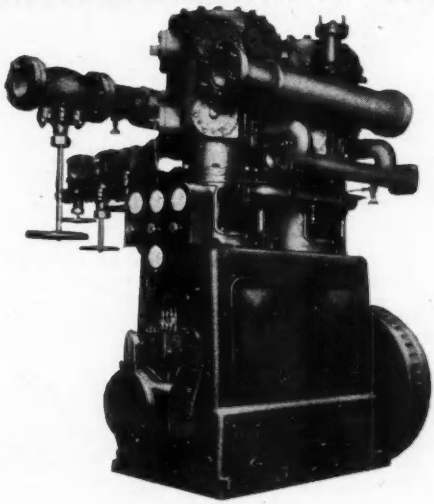

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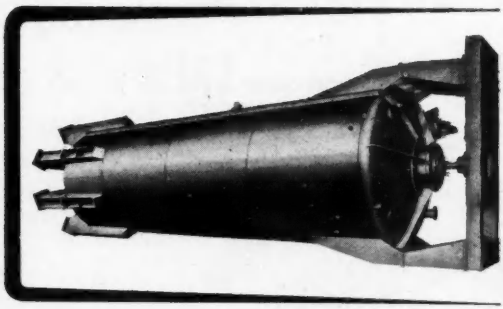

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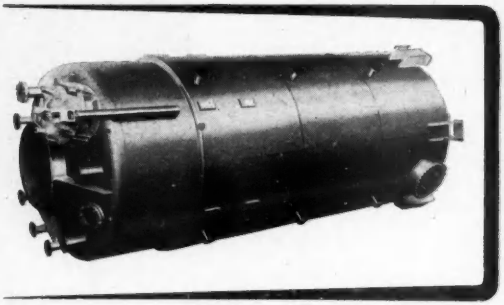

A Mild Steel Steam Jacketed Vacuum Fermenter, 4,000 gall. capacity : 7′ 0″ diameter × 17′ 2″ long. Jacket 7′ 4½″ inside diameter. Weight, 9¾ tons.

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W/29

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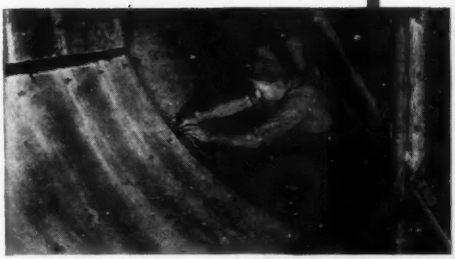
Dunlop surveyed the problem, then, co-operating with Water Company Engineers, Dunlop technicians experimented and found the solution. Now, 12,000,000 gallons of water are stored in the world's largest rubber "bag" housed inside the Reservoir. More than 100 tons of rubber and rubber compounds were needed—plus the fund of Dunlop technical skill—and a valuable asset of a public utility undertaking was saved.



Fixing rubber sheeting to wall surfaces by pegging with monel metal bolts set in the concrete with 'Rawlplug' bolt anchors. Ebonite nuts were fitted over the bolts and covered with rubber patches.

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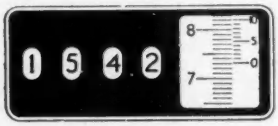

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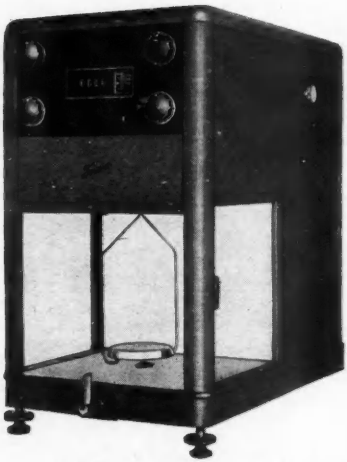

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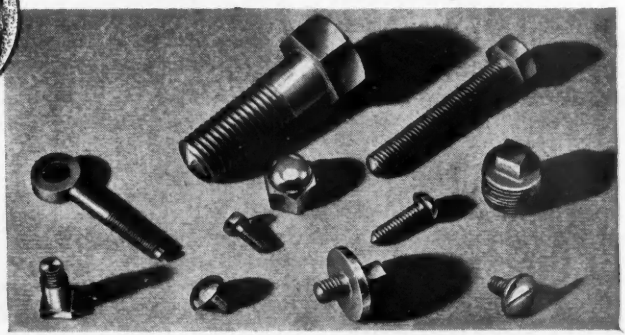

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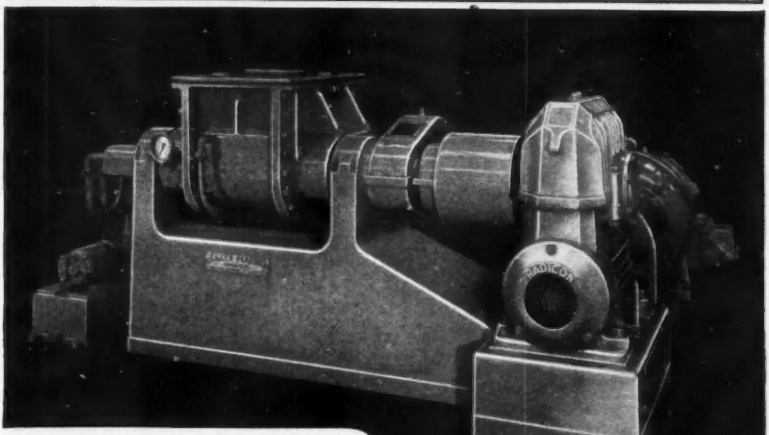

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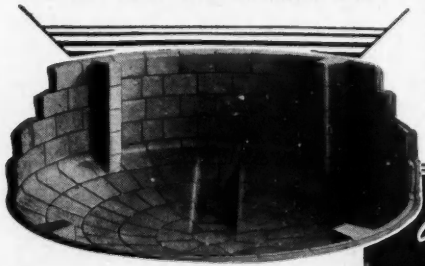

Stoppages for maintenance make a double charge on industry. To the cost of repairs and replacements must be added loss of output whilst the plant is idle.

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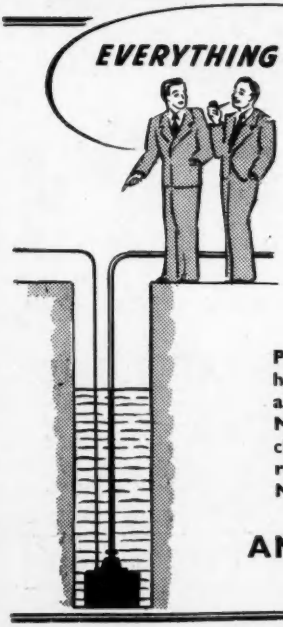

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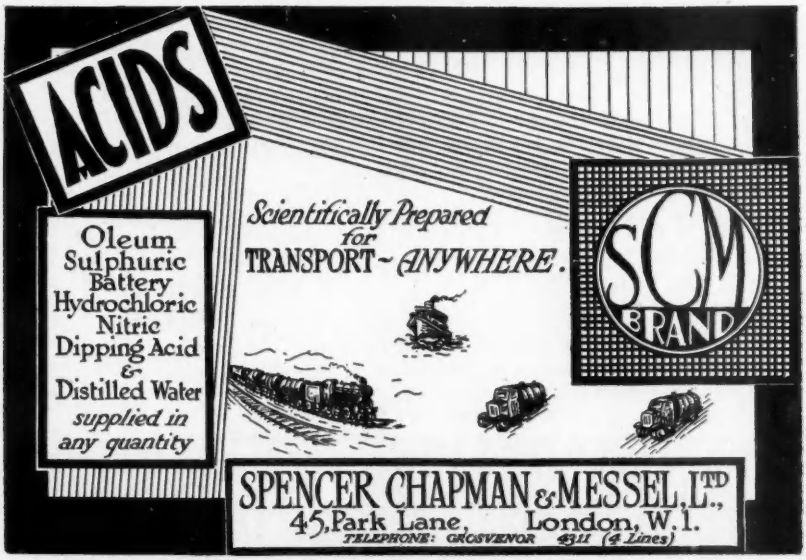

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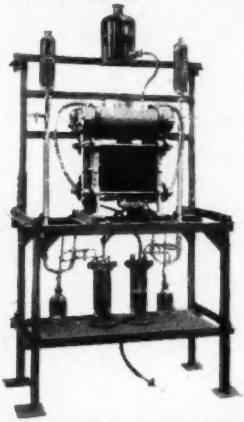

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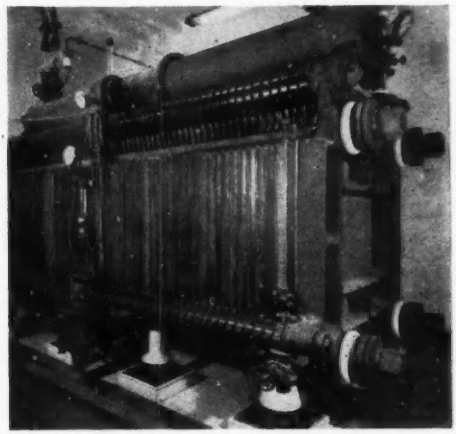

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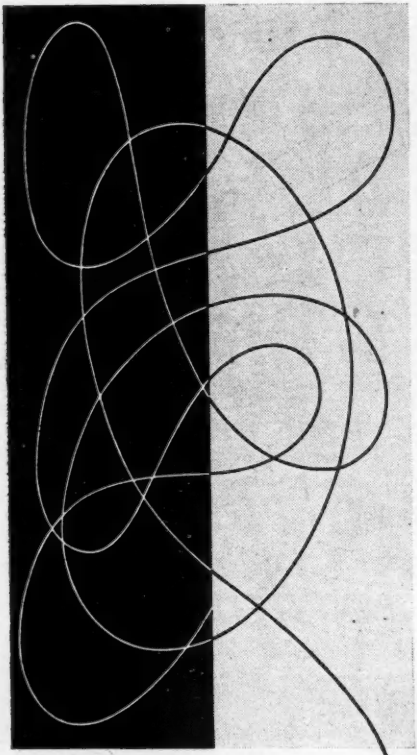

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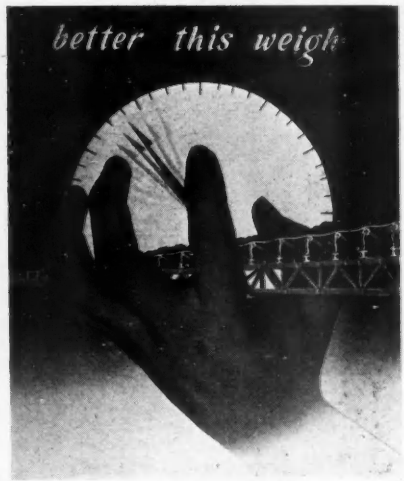

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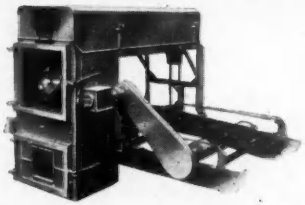

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Volume LXXI
Number 1833

Established 1919

The Chemical Age

The Weekly Journal of Chemical Engineering and Industrial Chemistry

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CONTENTS · 28 AUGUST 1954

New Tennis Racket String	416
Limits for Lead in Food	417
New Visqueen Plant	418
The Export Situation	419
The Distillers Co. Ltd.	420
Symposium on Analytical Chemistry	421
Problems of India's Soap Industry	423
CIL Expansion Plans	424
Canada's Chemical Industry	425
Home News Items	429
Personal	430
Overseas News Items	432
Publications & Announcements	433
British Chemical Prices	434
Chemical & Allied Stocks & Shares	440
Law & Company News	442

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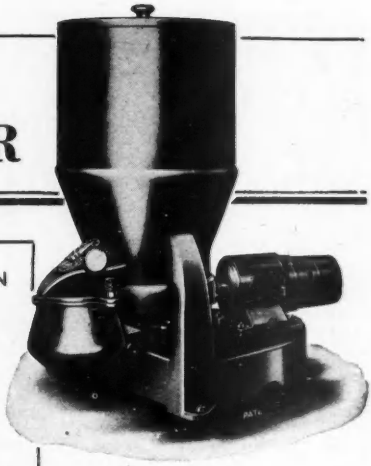

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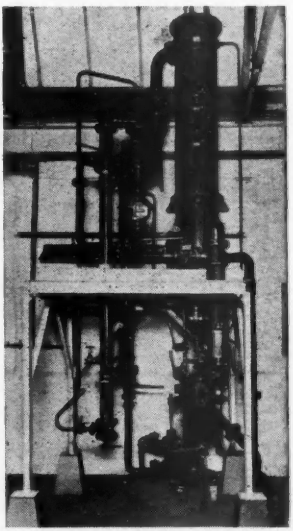

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German Competition

IS the reconstitution of the huge I.G. Farben trust one of the probabilities of the future? In 1956 the decartelisation orders of the occupying powers will expire; to prevent the re-amalgamation of the four successors new orders would have to be imposed. Already in 1954 the climate of Anglo-US-German relationship is totally changed and more often than not little more than lip-service is paid to the victor-vanquished relationship of nine years ago. In another two years it will be even more difficult to impose restrictions as a penalty of faded defeat.

There seems little doubt that the dissolution of I.G. Farben is looked upon as a 'paper' event within Germany. The four successors—Badische Anilin & Soda-fabrik, Cassella Farbwerke Mainkur, Farbenfabriken Bayer, and Farbwerke Hoechst—served clear notice of their spiritual unity last month by publishing all their separate statements of accounts and reports for 1953 on the identical day. The opportunities that are left to display unified action are not neglected. Subdivision is one of the temporary penalties for losing a war. It is too unnatural and too uneconomic to be permitted to last. In any case the main penalty—the confiscation of all the I.G. Farben patents—has been paid. Common sense must prevail. It is neither illogical nor unrealistic for informed German thought to be taking this shape. The re-emergence of the former German combine, possibly under another name to allay the qualms of sensitivity, will be exceedingly difficult and perhaps impossible to prevent. For the United States, turning a blind eye to re-amalgamation could mean yet one more painful contradiction in foreign and economic policy. There is little doubt that US foreign policy is wedded to the idea of rebuilding much of Germany's former strength as a European power; it will not be possible for American statesmen to pursue this policy and at the same time to renew one of the sanctions of defeat because American economic policy at home is traditionally anti-cartel.

The remarkable recovery of the German chemical industry has taken place in spite of the I.G. Farben dissection. It is sheer wishful thinking to suppose that recovery proves that dissection has done no harm. The rationalisation by which the I.G. Farben trust was first formed was an intelligent anticipation of the primary needs of the chemical industry in Europe. Rationalisation or economic integration—the name matters little—is far more essential in the 'fifties than it ever was in the 'twenties and 'thirties. The costs of new works and large-scale chemical plant are now much greater; the sums of money that must be spent upon research and development are far heavier and can only be based upon huge annual turnover. The 1953 reports of the four successors to I.G. Farben have revealed remarkable expansions in output and sales, notably in export sales—but the conditions of 1953 were 'boom' conditions. During 1953 and as a continuing process in 1954 chemical price levels have been declining, bringing inevitable problems of reducing production costs. Before the war Germany's low production costs for chemicals were made possible by the close integration of I.G. Farben, which was organised both horizontally and vertically. Predominantly because of this I.G. Farben became the largest single

chemical organisation in the world. Its four successors cannot regain this supremacy unless they can re-create the same basic conditions.

In the meantime the post-war successors are making huge sacrifices to finance new plant and new research. Dividends have not been notably increased despite the substantial increases in production and sales. In 1953 Farbwerke Hoechst spent 6.5 per cent of turnover on research, or nearly three times the net profit for the year. The net profits of Badische Anilin and of Farbenfabriken Bayer were in each case under 3 per cent of turnover, a rate to be compared with levels of 10 per cent or more for large US chemical companies. The revived prosperity of Western Germany's chemical industry is partly based upon narrow margins, the old commercial dictum of 'small profits and quick returns'; and commendably bold slices of the gross profits are being ploughed back into plant and research so that the future is mainly financed by the present. Nevertheless, with greater world competition for chemical markets and with chemical price levels on a downward trend, these frugal methods of keeping prices down and expanding future production are inevitably more difficult to sustain. The time must come when re-integration alone can further reduce German production costs and prices, when re-integration alone can continue the huge self-financing burden of research and new plant construction.

Although a great deal has been said in this country about the competitive threat of a revived German chemical industry, the effects have not so far been sharply noticeable. British chemical exports have not fallen back as German exports have re-entered world markets. The realistic explanation is that there has been room for both, room in a constantly expanding total market. In addition, German recovery has been delayed and British post-war expansion in chemical production—in range as well as in output—has enjoyed a favourable start. It is a profound error to assume that this relatively comfortable state of trade will continue indefinitely. The impact of German competition in 1956-1960 is certain to be far more severe than it has been in 1950-1954. The re-constitution of a single chemical combine rationalising all that matters in the West German chemical industry must intensify that competition more than any other event. Time may still be on our side but there is not so much of it left. Export trade must be even more rigorously pursued not only for its immediately current value but even more importantly for its hope of durability in later years.

There is, however, one new factor in Western Germany today that could prevent or at any rate delay the return of total integration to the chemical industry. In recent weeks there have been several strikes, and it is clear that a long period of extraordinary moderation by the trades unions is over. The workers of Western Germany have themselves made a big contribution towards the general industrial recovery by withholding wage demands, and some observers believe that this has been interpreted as trade union weakness by industrialists. A period of unrest and bitter wage bargaining now seems inevitable and this may well strengthen the powers of the unions. The integration of companies that are already large employers is likely to be resented by organised labour, and it is not utterly outside the bounds of possibility that the 'decartelisation' that was externally imposed will be continued by the forces of internal politics in Western Germany. But to rely upon this would be wildly optimistic.

This much is certain—the full weight of German chemical competition has yet to be felt. The effects of 1948-1953 research in the German industry are still largely in reserve; so, too, is the added strength of recently installed plant. If the next few years are to be more competitive, then Germany has more reserve strength up her sleeve. There may still remain room for the exports of both industries; so long as the world market for chemicals, especially new products, remains expansive, this can reasonably be hoped for. But there is no room for complacency. An expanding world demand is not necessarily a seller's market—indeed, the continuation of that expanding demand may depend more upon steadily falling prices than upon any other factor.

Notes & Comments

Lawns, Turf, & Chemicals

THERE are two very practical papers in the current issue of the *Journal of Science of Food & Agriculture*, (1954, **5**, [8], 393 & 397), each dealing with modern methods of defending lawns against their natural invaders, weeds and moss. It is perhaps something of a pity that these papers have not appeared in one of the more generally circulated chemical journals for there are probably few chemists who do not include looking after a lawn of one size or another among the chores of leisure. The first paper by R. B. Dawson, Director of the St. Ives Research Station (formerly the bold venture of the Golf Club's Union but now supported by sports clubs of most kinds), deals with weed control and a particularly informed survey of the effects of 2,4-D and MCPA is given. Above all, the practical conditions for using these modern selective weedkillers with maximum effectiveness are outlined, e.g. the best months for application, the type of weather that is desirable, the differences in susceptibility of the perennial weeds, the danger of using 2,4-D or MCPA on newly-sown grass, etc. Perhaps no event in garden science this century has been more revolutionary than the introduction of these growth-substance weedkillers. A lawn of high weed freedom has been brought within the reach of everybody at a small cost without the payment of a heavy price in back-bending labour. However, their use does not relegate the older methods of lawn care to the scrapheap; for good results, regular fertiliser treatment is still essential and hand-weeding has not been totally eliminated.

2,4,5-T Not Recommended

FOR highly resistant weed infestations the use of the more powerful 2,4,5-T has been suggested. Experience at St. Ives gives little support to this development. The substance is more costly and it does not prevent re-invasion; also, it tends to damage the grasses. Nor is the verdict upon growth-stunting chemicals any more encouraging. The labour demand of cutting may be reduced temporarily by such substances as trichloracetic acid and maleic hydrazide but some months later the stunting effect wanes and growth is then excessive. Moreover, there is a strong tendency for weeds to recover more readily than the grasses. Chemicals seem unlikely to reduce the task of lawn-mowing.

Mercurised Lawn Sands

THE second paper deals with mosses. Moss invasion has always been much more difficult to control than weed invasion, largely because there are at least 30 different kinds of moss and the conditions that encourage moss growth vary widely. Until recently chemical methods were merely palliative, potassium permanganate solution or ferrous sulphate as a solid dressing giving some degree of temporary control. It has been found in recent years that mercury compounds in very small amounts will exercise a powerful growth-checking effect upon moss growth. This effect is much longer-lasting and it is shown with both classes of moss, the kinds that reproduce themselves by spores and the kinds that develop vegetatively. Calomel, because of its low toxicity, has been selected as the most suitable mercury compound for moss control, and 'mercurised lawn sands' can be regarded as the first truly effective anti-moss weapon gardeners have been given. Perhaps the most remarkable thing is that this fairly simple development has had to linger until the 1950's to be discovered, for calomel has had a fairly long history of use in other horticultural tasks.

A Double Service

CHEMISTRY has certainly made lawn cultivation much easier and on the whole less costly. There are few houses without a lawn and very often pride of possession is greatest for the very small plot of grass that separates the house from the road. The annual demand for these weed-reducing and

moss-checking chemicals must steadily expand so long as their merits are soundly and clearly presented to the public.

R-Isotopes in Industry

IN the United States there are already 860 industrial users of radio-isotopes. Yet much less publicity is given to this type of development than to the use of radio-labelled elements in research. A brief news report in *Chemical & Engineering News* this month (1954, **32**, 3036) mentions a few of the monitoring tasks that radio-isotopes are carrying out. Antimony-124 is being used to check oil pipe line flow; heavy losses are saved every time a change from one grade to another is made. With a Geiger counter at a suitable point outside the pipeline, the arrival of the new grade, if it contains the radio-isotope, can be accurately judged. Manganese-54 is being used in paint mixing; minute amounts of this isotope added to the pigment enable the point of uniform mixing to be correctly assessed. Geiger counters on two stirring paddles show uniformity of mixing when each of them records the same amount of radio-activity. Leak detection in enclosed water systems is being aided by iodine-131; the point of leakage can be readily located by the large increase in *gamma* radiation there. The emission of radiation from radio-isotope capsules can be used to measure the thickness of surface coatings while these are being applied to metals. Similarly, flaws in metal castings or welding are shown up if a capsule is placed on one side of the material and a film on the other. Radio-isotopes can also be used to eliminate static electricity. Indeed, the known uses are already very numerous although the full potentialities of radio-isotopes as control agents in industry have not yet been approached. In 1946 less than 200 people were employed in making radiation detecting apparatus; the industry has grown enormously and now it employs well over 2,500 people. The AEC has delivered approximately 50,000 consignments of radio-isotopes to users in the United States since commercial distribution began.

New Tennis Racket String

DuroLastek Stronger Than Gut

A NEW product for stringing tennis rackets has been produced at the Dunlop racket factory at Waltham Abbey. Known as DuroLastek, it consists of spiral wrappings of nylon (or Terylene) wound round a central nylon core with a newly-developed adhesive which has no harmful effect on the string. The new string can be made in many ways, by varying the thickness of the core or the number of wrappngs.

The production of DuroLastek was shown to the Press last week, and laboratory tests described to prove its qualities. It is claimed to be the equal of, or better than, natural gut in most ways and superior to nylon or silk.

Its principal advantages are that it lasts from five to ten times as long as gut under normal conditions and is almost waterproof, whereas gut is very sensitive to damp conditions. One racket strung with DuroLastek has been subjected to more than 140,000 strokes (about ten years' normal playing life) and shows no sign of wear.

Tests to determine the tensile strength show that it is as strong as the best gut; it is slightly less resilient, but has a higher coefficient of friction.

DuroLastek is already in commercial production, and tennis rackets strung with it have been used this season by leading players at Wimbledon. It will, Mr. Frank Smith, director and sales manager of the Dunlop Sports Company, said, lengthen the life of a tennis racket, reduce its price and halve the cost of re-stringing it.

The product is the result of 2½ years' research at the Waltham Abbey factory and the company's research laboratories at Fort Dunlop and Speke.

New Q. & Q. Agency

Quickfit & Quartz Ltd., manufacturers of interchangeable glassware, of Stone, Staffs, announce that they have appointed the Wakefield Company, of Sherbrooke Street West, Montreal, 2, as their agents in Montreal and Ottawa.

Limits for Lead in Food

Recommendations of Contamination Sub-Committee

THE Minister of Food has approved for publication a revised report presented to the Food Standards Committee by their Metallic Contamination Sub-Committee recommending the introduction of limits for lead in foods. An earlier report on this subject by the sub-committee was published in December, 1951. Since then the sub-committee have reviewed the representations received from trade and other interests and the revised report replaces the earlier report.

The revised report recommends that statutory effect should be given to the limits now proposed and that any statutory limit prescribed should be subject to periodical review. The Food Standards Committee have adopted the report and before taking any action on it the Minister of Food will receive any further representations which interested parties may wish to make. They should be addressed to the Assistant Secretary, Food Standards and Labelling Division, Ministry of Food, Great Westminster House, Horseferry Road, London, S.W.1, and they should be lodged not later than 31 October.

In the revised report, the sub-committee again point out that lead is a cumulative poison and that repeated small doses, each of which is too small to produce any demonstrable effect by itself, may in course of time prove toxic. The sub-committee have proposed the lowest limits which they consider can at present be readily attained under conditions of good commercial practice; they are of opinion that it should be possible in due course to reduce the limits proposed for a number of items including beer, cider, wines, iced lollies, pectins and food colourings.

General Limits Approved

The sub-committee confirm the appropriateness of the general limits previously recommended, i.e., 0.2 ppm. lead for beverages ready-to-drink and 2 ppm. for other foods. For a few foods it has been considered appropriate to recommend a lower limit than 2 ppm. On the other hand the sub-committee's original inquiries, and subsequent representations, have drawn attention to items of food and drink to which these general limits cou'd not at present be applied, principally foods liable to contamination from the container, concentrated foods and substances in the nature of food adjuncts which only enter into the diet in small quantities. The foods and drinks which cannot be brought within the general limits or which can be subjected to lower limits, and the limits recommended in each case, are as follows:—

(i) *Beverages*

Concentrated soft drinks (but not including concentrates used in the manufacture of soft drinks), brandy, gin and geneva, rum and whisky. 0.5 ppm.

Wines, liqueurs, alcoholic cordials and cocktails and alcoholic liquors not otherwise specified; beer; cider; fruit and vegetable juices (including tomato juice but not including lime juice and lemon juice). 1 ppm.

(ii) *Other Foods*

Anhydrous dextrose and dextrose monohydrate; edible oils and fats; refined white sugar (sulphated ash content not exceeding 0.03 per cent). 0.5 ppm.

Ice cream, iced lollies and similar frozen confections. 1 ppm.

Canned fish; canned meats; dried or dehydrated vegetables (other than onions); tomato puree paste or powder containing 25 per cent or more total solids; edible gelatin; meat extracts and hydrolysed protein.

All types of sugar, sugar syrups, invert sugar and direct consumption coloured sugars with a sulphated ash content exceeding 1.0 per cent. 5 ppm.

Raw sugars except those sold for direct consumption or used for manufacturing purposes other than the manufacture of refined sugar; edible molasses; caramel; liquid and solid glucose and starch conversion products with a sulphated ash content exceeding 1.0 per cent. 5 ppm.

Cocoa powder. 5 ppm. on the dry fat-free substance.

Yeast and yeast products. 5 ppm. on the dry matter.

Chemicals which may be used in foods and for which a lead limit is specified in the BP or BPC. The limits specified in the edition of the BP or BPC current from time to time.

Tea; dehydrated onions; dried herbs and

spices; flavourings; alginic acid, alginates, agar, carrageen and similar products derived from sea-weed; liquid pectin; chemicals not otherwise specified, used as ingredients or in the preparation or processing of foods. 10 ppm.

Food colourings (other than caramel). 20 ppm. on the dry colouring matter.

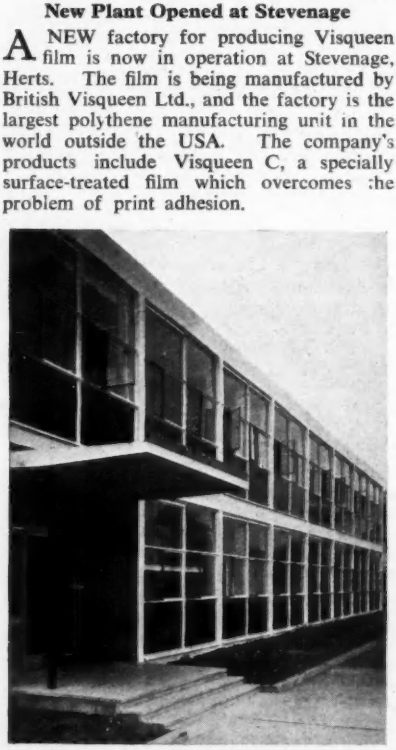
Solid pectin. 50 ppm.

So far as shell-fish and crustacea in which lead may occur naturally in amounts higher than 2 ppm. are concerned, the sub-committee recommend that the sale of these foods containing lead in excess of 2 ppm. be permitted if it can be shown that the lead is natural to the fish.

Visqueen Film Production

New Plant Opened at Stevenage

A NEW factory for producing Visqueen film is now in operation at Stevenage, Herts. The film is being manufactured by British Visqueen Ltd., and the factory is the largest polythene manufacturing unit in the world outside the USA. The company's products include Visqueen C, a specially surface-treated film which overcomes the problem of print adhesion.



Part of the office and laboratory block at Stevenage

During the next few months Visqueen will be introduced in tube form up to 100 in. layflat width and up to 200 in. as sheet. These large sizes will open up new markets, as they make it possible to cover large areas at low cost.

The opening of the factory initiates a new phase in the development of thermoplastic packaging films in this country. After five years development work by Imperial Chemical Industries Ltd. with Alkathene film, made on a pilot plant scale, a market had been created of sufficient size to justify large-scale continuous operations.

To meet this situation, just over a year ago Imperial Chemical Industries Ltd. pooled resources with The Visking Corporation of the USA to form British Visqueen Ltd. This company's new factory incorporates the best features of manufacturing methods evolved in Britain and in the USA. These enable large tonnages of Visqueen (which has now replaced Alkathene film) to be made in a wider range of sizes, and at lower cost. In anticipation of production economies, Visqueen prices were recently substantially reduced.

British Visqueen Ltd. will not convert Visqueen film into bags, liners, printed reels, etc. They aim to provide the package manufacturing industry as a whole with film which will perform efficiently and economically on automatic machinery, and at prices based on continuous large scale operation.

Contract Signed

A contract between the Government of the Union of Burma and the London contractors, Holland & Hannen & Cubitts Ltd., was signed on 23 August for the civil engineering work, erection of buildings and the necessary mechanical and electrical installations for The Burma Pharmaceutical Industry. As announced previously (THE CHEMICAL AGE, 1954, **70**, 992), contracts for some of the plant have already been placed by Evans Medical Supplies Ltd. as managing agents for The Burma Pharmaceutical Industry, and more contracts will be placed in the near future. The corner stone was laid on the site on 23 April by the Prime Minister of Burma.

The Export Situation

General Increase But Falls in Some Commodities

JULY'S figures for chemical exports showed an increase in value of well over £1,000,000 compared with June, which consisted of almost the same number of working days. In a month in which export values as a whole fell, those of the chemical industry rose from £17,256,570 to £18,799,420.

The largest increases were in fertilisers and medicinal and pharmaceutical products. Ammonium sulphate rose by more than 50 per cent, and ammonium nitrate by over 100 per cent.

In the class of chemical elements and compounds, the most striking increase was that of anhydrous aluminium oxide, which, after a tremendous fall in June, nearly reached its May figures. Lead tetra-ethyl took a knock after increasing steadily since April. Coal-tar products also fell, benzole to the lowest since March.

The most significant rise was in exports to China, which jumped from £85,222 to £239,253. Increased trade with China may also account for the large increase in exports to Hong Kong. In general, exports to the sterling area increased with one or two exceptions, the principal one being Pakistan. Sales to the US rose, but have not yet reached the figures of the earlier months.

VALUE OF EXPORTS IN £ : PRINCIPAL CUSTOMERS

	July 1954	June 1954
Gold Coast	341,413	277,116
Nigeria	338,163	250,086
South Africa	1,026,744	853,610
India	1,117,790	1,207,660
Pakistan	349,812	582,300
Singapore	350,261	305,197
Malaya	272,466	237,602
Ceylon	252,980	275,311
Hong Kong	441,302	286,246
Australia	1,982,560	1,373,295
New Zealand	751,648	628,903
Canada	577,712	506,754
Eire	553,691	691,585
Finland	174,921	227,563
Sweden	494,291	568,412
Norway	306,163	229,020
Denmark	332,630	232,692
Western Germany	366,230	571,164
Netherlands	759,935	649,446
Belgium	390,257	319,009
France	451,277	432,834
Switzerland	206,641	270,484
Italy	400,637	461,945
Egypt	264,475	198,509
Burma	228,065	215,260
China	239,253	85,222
US	518,910	456,357
Argentine	371,387	304,737
Total value of chemical exports	**18,799,420**	**17,256,570**

VALUE OF EXPORTS IN £ : PRINCIPAL COMMODITIES

	July 1954	June 1954
Acids, inorganic	51,354	39,662
Copper sulphate	195,609	270,678
Sodium hydroxide	270,421	457,305
Sodium carbonate	283,033	281,230
Aluminium oxide, anhydrous	42,711	154
Aluminium sulphate	32,806	44,212
Calcium compounds, inorganic	59,467	50,744
Magnesium compounds	50,289	59,854
Nickel salts	50,315	52,980
Glycerine	23,706	30,814
Ethyl, methyl, etc., alcohols	148,740	102,769
Acetone	48,248	20,768
Lead tetra-ethyl	771,988	918,886
Total for chemical elements and compounds	**5,212,042**	**5,141,290**
Coal tar	90,342	101,665
Cresylic acid	33,233	44,194
Benzole	454	210,743
Creosote oil	167,744	51,218
Total from coal tar, etc.	**334,141**	**441,112**
Indigo, synthetic	117,652	79,298
Total for synthetic dyestuffs	**883,072**	**830,281**
Medicinal and pharmaceutical products, total	**3,068,785**	**2,618,864**
Essential oils—		
Natural	46,477	35,663
Synthetic	60,158	56,667
Flavouring essences, etc.	104,500	101,113
Total for essential oils, perfumes, etc.	**1,964,019**	**1,763,531**
Ammonium nitrate	27,758	11,185
Ammonium sulphate	940,974	600,004
Total for all fertilisers	**1,000,743**	**637,320**
Paints, pigments and tannins, total	**1,609,876**	**1,550,838**
Plastics materials, total	**2,036,517**	**1,823,768**

Atomic Energy in India

The Government of India has decided to create a separate Department of Atomic Energy under the direct charge of the Indian Prime Minister, Mr. Nehru. Dr. H. J. Bhabha, Chairman of the Atomic Energy Commission, will function as secretary of the new department. The department will be located in Bombay and will take over from the Union Ministry of Natural Resources and Scientific Research all business connected with atomic energy. Arrangements are being made to transfer the necessary personnel from Delhi to Bombay.

The Distillers Company Limited

Steady Progress in Industrial Group

IN his statement, issued with the directors' report and accounts, the chairman of The Distillers Company Limited says that the year was one of steady recovery and progress for most of the Divisions in the Industrial Group. The bulk of the report was printed in last week's issue. Further extracts, of particular interest to the chemical industry, show that carbon dioxide sales continued to expand and the use of the bulk tanker delivery service instituted by the company is increasing rapidly.

The statement continues:—'A new development by your company which has aroused great interest in engineering circles, is the application of carbon dioxide for prolonging the life of machine cutting tools and at the same time very greatly accelerating the speed of machining of the tough high alloy steels used for aero-engines and rearmament products.

'Sales of solvents and our range of other chemicals are satisfactory both for the home market and export, although conditions remain keenly competitive.'

New Unit at Hull

'In conjunction with the Oronite Chemical Company of California, a company has been formed under the title of Orobis Limited, in which we have a 50 per cent interest, to manufacture in this country the range of lubricating oil additives now produced by the Oronite Company in the USA. These chemical additives, which have been in use for a number of years, have become important constituents in the composition of lubricating oils. The new unit, which will be located at Hull, should be in production early next year.

'As from 1 October, 1953, we leased from the Ministry of Supply, the Kenfig carbide factory, South Wales. This plant, which contributes the major proportion of the carbide requirements of the United Kingdom, was originally built in 1941 by the Company as agents for the Ministry, since when we have continued to manage it on an agency basis. Under the new arrangement, we are operating this unit commercially with satisfactory results.'

Referring to the Biochemical Division the statement says:—'Last year, I drew attention to the competitive conditions in world markets. These have continued on an increasing scale, particularly in regard to penicillin and streptomycin. This has inevitably affected our earnings, but the process improvements introduced during the past year and extension of the range of products made will, I am confident, enable us to maintain our position in this industry.'

In the Plastics Division the return to more active trading conditions early last year was followed by a steady rise in demand for synthetic resins, and although competition remains keen and selective, good progress is being made by widening the range of materials.

'As from 28th February last, our subsidiary Magnesium Elektron Limited, ceased acting as agents for HM Government and is now producing magnesium on its own account. The excessively high cost of electric power, now exceeding four times the cost in 1939, has created serious problems, but we have been able to make such arrangements and alterations to the process to permit the plant to continue to produce magnesium at prices which at present are close to or better than those ruling in foreign markets. The Company's exports of special alloys and alloying materials to the USA, Canada and the Continent have been satisfactorily maintained.'

The statement says that the associated companies, National Chemical Products Limited of South Africa and CSR Chemicals Pty. Ltd., of Australia, had successful years. Dealing with research, it says that an example of the successful completion of development work on a new process that has been under investigation for several years is the commercial operation in the USA, Canada and France of a method of making phenol. Useful royalties are now being received from the licensing of the company's patents on this and other processes which have been developed.

MR. FRANK NICOLL, of Broadstairs, late of Emmanuel Road, Southport, retired analytical chemist, left £23,328 gross, £22,890 net (duty paid £3,440).

Symposium on Analytical Chemistry

Industrial Firms Support Birmingham's Efforts

THE growing reputation of the four-year-old Midlands Society for Analytical Chemistry will be considerably enhanced by their second symposium on Analytical Chemistry, which began at Birmingham on Wednesday, 25 August, and will continue until 1 September. More than 300 delegates are attending this international meeting, and a very full programme of technical meetings, works visits and social functions has been arranged (see THE CHEMICAL AGE, 1954, **70**, 1199).

Several companies have made arrangements for visits to be made to their works and chemical laboratories, and in some cases their hospitality includes the provision of a dinner on the evening following the visit. Hospitality is being extended by Accles & Pollock; Albright & Wilson; the Birmingham Small Arms Co.; British Industrial Plastics; British Titan Products; Cadbury Brothers; W. Canning & Co.; Dunlop; General Electric Co.; Griffin & Tatlock; I.C.I. Metals Division; Joseph Lucas; Midland Tar Distillers; Mitchells & Butlers; L. Oertling; T. J. Priestman; J. & E. Sturge; Triplex Safety Glass; Tube Investments; and Harry Vincent.

At the same time as the symposium there is an exhibition of early scientific books and papers, including a collection of rare herbals, drawn from the University library; and an exhibition of apparatus and chemicals by laboratory furnishers.

New Designs of Apparatus

Being shown by Baird & Tatlock (London) are a number of new designs of apparatus, including a potentiometric titration apparatus for use with a wide variety of potentiometers or *p*H meters; a self-contained Karl Fischer apparatus with a high-sensitivity end-point indicator built in; a thermostatic water circulator for optical instruments which enables temperatures of up to 50° to be maintained within 0.2° and higher temperatures within 0.5°; and an electrometric titrimeter for the determination of bromine number of gasoline, kerosene and distillates in the gas-oil boiling range.

Platinum apparatus being shown by Baker Platinum Ltd. includes the Deoxo catalytic gas-purification process; the Deoxo indicator, a practical and accurate means for detecting and measuring small quantities of oxygen present as an impurity in other gases from 0.001 to 1 per cent; and a number of precious metal catalysts.

Analoid compressed chemical reagents, typical standardised samples of metals, and spectrographic standards are on the stand of Ridsdale & Co. and the Bureau of Analysed Samples, of Newham Hall, Middlesbrough.

Laboratory Chemicals

Representative ranges of laboratory chemicals are displayed by Hopkin & Williams Ltd., BDH, and May and Baker. On the stand of Roland S. Belcher are instruments used in the determination of the hardness of rubber and rubber-like materials; drum driers and roller mills; laboratory ovens; and 'Chemix' laboratory mixers.

Bombs, autoclaves, hydrogenators, hydraulic pumps, magnetic separators, micromanipulators, etc., are exhibited by Chas. W. Cook & Sons; while a comprehensive range of direct-reading *p*H meters and electrodes and an automatic titrimeter are displayed by Electronic Instruments Ltd.

Heating mantles, extraction units and flexible heating tapes are to be seen in the displays of Electrothermal Engineering Ltd., and of Isopad Ltd.

New features exhibited by H. J. Elliott Ltd. include the improved ströhlein carbon-in-steel apparatus, three and four bulb Orsat gas analysis apparatus, and a range of short-form thermometers — the general purpose 'BEE-KA.' The exhibit of the Eureka Scientific Co. is confined to a display of apparatus for semi-micro qualitative inorganic analysis, designed by Mr. H. Holness, senior lecturer at S.W. Essex Technical College, including an electric centrifuge, a gas generator, and a 'portable laboratory' making its debut at this exhibition. This last is designed for outside work in the field or factory, and is completely self-sufficient in chemicals, water and heating for a normal working day—although it is no

larger than a small suitcase and weighs only a few pounds.

The range of 'EEL' equipment being shown by Evans Electroselenium includes the well-known portable colorimeter, the absorptiometer, the nephelometer, and the flame photometer. Tinsley polarographs, which are now being marketed by Evershed & Vignoles, include the pen recorder and the smaller direct reading instrument, the Polarograph Minor.

Photoelectric Colorimeter

Apparatus displayed by A. Gallenkamp & Co., includes a photoelectric colorimeter, micro combustion furnace and particle size determination apparatus; while George & Becker are showing a wide range of their balances and other laboratory apparatus.

Bulky instruments are represented by photographs in the exhibit of Hilger & Watts, but apparatus actually on show includes the redesigned Uvispek spectrophotometer and the new Spekker fluorimeter. The latest British and American textbooks on analytical chemistry are the feature of the display by Hudson's Technical Bookshop.

Joblings have on show a representative range of Pyrex apparatus for micro-analysis, as described in a recent book by Dr. J. H. Wilkinson of Sutherland Technical College; exhibits by Quickfit & Quartz include chromatographic adsorption columns, the chromatocoil, and the Craig counter-current extraction apparatus.

A platinum wound furnace of an entirely new type, designed specifically for the determination of the fusion point of coal ash, is the principal exhibit on the stand of Johnson & Matthey, another interesting item being a new type of electrode.

Electrometric titrators, a moisture meter, and *p*H meters are part of the display of Marconi Instruments; while Parkinson & Cowan show both wet and dry type laboratory gas meters.

Oertlings are exhibiting the most important of their Releas-o-matic balances; and among others, Stanton Instruments have a complete thermo-recording balance, which permits continuous recording of weight changes side by side with temperature changes in a furnace which is mounted at the rear of the balance.

The range of Zeo-Karb and De-Acidite ion exchange resins displayed by Permutit includes some produced in sheet form, instead of the usual granules, a development of considerable interest. A wide range of *p*H meters and titration equipment is exhibited by W. G. Pye & Co.

The stand of Rotameter Manufacturing Co. exhibits some of the diverse quantitative analytical procedures requiring the measurement and control of fluid flow rate, including gas analysis by absorption, gas chromatography, combustion analysis, conductimetric analysis, and photometric analysis.

The new Hartley 2-piece and 3-piece funnels are among the apparatus exhibited by Norman Sheldon on behalf of the Worcester Royal Porcelain Co.; and the Thermal Syndicate show a wide selection of Vitreosil combustion ware, vapour lamps, and fused quartz apparatus.

Loviband comparators and their many accessories are to be seen on the stand of The Tintometer Ltd.; while J. W. Towers & Co. exhibit a wide and representative range of their laboratory apparatus. Weyco (Equipment) Ltd., have a similar display, an interesting item being the 'oven-cum-hotplate.' Unicam instruments include the well-known spectrophotometers and colorimeter.

A number of demonstrations of new techniques in analytical chemistry have been arranged, those demonstrating being Accles & Pollock Ltd.; the Admiralty Bragg Laboratory; British Cast Iron Research Association; British Ceramic Research Association; British Coke Research Association; British Non-Ferrous Metals Research Association; British Nylon Spinners; Brown-Firth Research Laboratories; Courtaulds; Geigy Co.; Courtauld Institute of Biochemistry; Mond Nickel; North Thames Gas Board; University of Birmingham Chemistry Department; University of Bristol Chemistry Department; and West Midlands Gas Board.

Further reports on this ambitious symposium will appear in next week's issue, but the opening day has already shown that it will be a great success.

Employees Pay Respects

Fifty men from J. & W. Whewell chemical works at Radcliffe walked bareheaded at the funeral on 18 August of a director, Mr. J. W. Whewell, the 32-year-old Bury racing driver killed at Snetterton races.

Problems of India's Soap Industry

High Costs Mean Low Consumption

THE main problem facing the soap industry in India is increasing the demand for soap. Plans for development in the next few years are expected to bring the yearly production up to 200,000 tons, which, after allowing 10,000 tons for export, will ensure 15 oz. for each person. But at present only 10 oz. are used, compared with the Western average of between 300 and 400 oz. The low consumption is partly due to the high cost of soap, which in its turn is due to the high price and scarcity of the raw materials —groundnut oil, coconut oil and other substitute oils, and caustic soda.

India's soap industry developed considerably during the war, mainly because of the demand by the services. Production rose from 70,000 tons in 1938-39 to 108,000 tons in 1948. Since then there has been a slight drop in production, which was about 100,000 tons in 1950.

There are three classes of unit in the industry, large, small and cottage scale. The large units mainly concentrated in and around Bombay and Calcutta, produce full-boiled, settled washing soaps and milled toilet soaps and are generally attached to oil mills and refineries or hydrogenation plants, so as to take advantage of the cheap soap stocks available. The smaller factories make soap by the semi-boiled or cold process; they do not possess adequate equipment and their products are not of a superior quality. The cottage units produce only cold process soaps of low grade.

Mainly Private Enterprise

Although some of the State Governments, such as those of Mysore and Madras, own and run soap factories, the industry is mainly in private hands. The chief firms are Lever Brothers and the Tata Oil Mills Company, which between them account for over a third of the production in large-scale units. About 5,000 people were employed by the large factories in 1950.

Imports of soap into India in recent years have been insignificant and restricted mainly to soaps of medicinal or special quality. Small quantities are exported, principally to Pakistan and Iraq, but unless the cost can be brought down, there is little chance of expanding the export trade. The difficulty might be overcome by stepping up the production of copra and coconut oil in the country by increasing the area under coconut cultivation and increasing the yield per tree by intensive cultivation and by using substitute oils recovered from neem, karanja and pisa which are not needed for edible purposes.

Estimated Capacity

The industry's productive capacity, as opposed to its actual production, is estimated at present at about 265,000 tons a year. The Panel on Oil and Soap Industries in 1947 fixed a production target of 300,000 tons, and up to 1951 additional capacity equivalent to 16,340 tons came into existence. Since then the capacity has been increased by 6,570 tons and schemes at present being implemented will increase it a further 8,000 tons, which nearly attains the aim set by the panel. Because of the difficulties experienced by the industry in using the existing productive capacity to the full, it is not considered necessary in ordinary circumstances to allow additional capacity to come into existence.

Two factories are implementing schemes for production of glycerine from the spent lye, and it is recommended during the period of India's Five-Year Plan that considerable improvement in the technique of production could be made in this way. In factories employing the cold process, the lye is not separated, but in factories using the boiled process, both small and large scale, it is generally separated from soap.

The present capacity for recovering glycerine is 3,150 tons a year, while production was 1,870 tons and 3,340 tons in 1950 and 1951 respectively. Encouragement of the glycerine industry by enabling the larger factories to put up recovery plants is recommended, both in the interests of bringing down the cost of soap and helping other industries who require glycerine. In the case of the smaller units which are not too far from one another, it might be possible to develop the recovery of glycerine on a co-operative basis by handling the lye in a central plant.

CIL Expansion Plans

Improvements in Research & Production Facilities

INDICATION that Canadian Industries (1954) Ltd. will spend nearly $60,000,000 (roughly £23,000,000) on expansions, development and improvement of its plants, products and operations over the next three or four years was given in a recent company announcement.

Of the total, at least $18,000,000 will be spent by the end of next year, the company revealed. A development and improvement programme calling for outlay of more than $6,000,000 for the balance of this year is being carried out. Plans already made for 1955 will require at least twice that amount, the report said.

To Equal Former Strength

These definite commitments, the announcement added, were 'part of expansion plans which are likely to bring the company's fixed investment in three or four years' time to as large a figure as the former CIL organisation before the recent division.'

The official outline of the plan of division allotted to CIL (1954) fixed assets amounting to $72,000,000 out of the total of $131,100,000 of Canadian Industries Ltd. It will thus require spending of at least $58,400,000 to bring the figure for the new CIL up to the old company's total.

Under the plan of division, CIL (1954) was allotted a much larger number of plants and products and a larger total of fixed assets than Du Pont Co. of Canada Ltd. and its related holding company, Du Pont of Canada Securities Ltd. However, the company also ended up with larger current liabilities and depreciation reserves, and no capital surplus against one of $13,700,000 retained by Du Pont of Canada.

The company report that in the initial stages this year strong accent has been placed on research and development, with almost $2,000,000 being expended on four specific projects. The company's combined activities in this field give it the largest research and development organisation in Canadian industry.

Principal research project is the extension of the facilities of the company's central research laboratory at Beloeil, Que., which will be officially opened this autumn. Included are new equipment, a new building, and an increase of 50 per cent in the number of technical staff.

Other research and development undertakings at present under way are a new mechanical development laboratory at the ammunition plant at Brownsburg, Que.; a new testing and development laboratory at the polythene plant at Edmonton; and additions to the paint development laboratories in Toronto.

Extensive improvements in production facilities are being undertaken for chemicals, sporting ammunition, commercial explosives and paint and varnish. At Cornwall and Shawinigan Falls expansion of chlorine and caustic soda facilities will increase the output of these chemicals. At Brownsburg new machinery will provide that plant with the latest equipment on the continent for the production of electric blasting caps. In addition, approximately $1,500,000 is being spent on improvements to the explosives plant at Beloeil, and the York paint and varnish plant in Toronto.

Beyond these undertakings for plant improvements and expansion, the company has been carrying out a series of studies on the possibility of manufacturing certain new products in Canada. These studies are well advanced and at least one is waiting only for the flow of natural gas into eastern Canada.

At Millhaven, Ont., the $20,000,000 Terylene plant being built by Imperial Chemical Industries of Canada is well on the way to completion. Part of the plant is already in operation and Terylene fibre being manufactured in Canada is now available—in experimental quantities. As previously announced, this project will in due course be offered to Canadian Industries (1954) Ltd., and it is expected that the offer will be considered before the end of the year.

Canadian Paint Sales

Sales by the Canadian paint and varnish industry this year are expected to approach last year's record figure of $110,000,000. Five months' sales in 1954 of $45,000,000 compare with $48,000,000 for the corresponding period last year.

Canada's Chemical Industry

Some Impressions by a Returning Native

THE exile returning to Canada after an absence of 13 years could not help being thrilled at the tremendous changes which have taken place nor could he avoid catching some of the enthusiasm and optimism which his stay-at-home countrymen possess. As one whose clearest memories are of 'The Dirty Thirties' or the great depression of the 1930's, the exhuberant confidence that Canadians have in their country's future was, at first, hard to understand. However, after travelling several thousand miles through this vast country, talking with people and seeing sections of almost all of the chief industries, he became mildly infected with this fervent faith.

From the tremendously rich iron deposits in Labrador and Quebec, westwards to the oil fields in Saskatchewan and Alberta and on to the huge aluminium and hydro-electric project at Kitimat on the Pacific Coast, the whole country is throbbing with energy and even excitement. Foreign capital is pouring into the country from south of the border and overseas and Canadians are investing their savings, more than ever before, in their own industries. Few people, regardless of their nationality, now doubt that Canada is on the threshold of a greatly increased prosperity.

Pace Slackening

The Canadian chemical industry is not at the moment, however, quite so buoyant as such industries as mining, oil and lumbering, but the future is still bright. During the past two or three years the industry has greatly increased production facilities, but there are signs that the expansion rate may slacken off. Limits will be imposed by the rate of development of user industries and by population and capital scarcities. Furthermore, competition from American, German and Japanese manufacturers is causing some firms to stop and consider their production costs, and in the case of polythene and ethylene glycol, tariff protection is being sought for the young and comparatively defenceless home market. Surplus American production of a few organic chemicals has temporarily caused some embarrassment to Canadian producers but no one is taking the matter too seriously. It is confidently believed that domestic suppliers will soon be in a position to cut production costs and that the demand will increase with the continuing growth of consuming industries. In any case there is exceptional flexibility in the industry.

A Record Year

In 1953 Canada's chemical industry experienced a record year with production climbing 6.4 per cent to $847,850,000 or approximately £314,000,000. The industry's output value has more than doubled since the war and last year was more than five times the value of any pre-war year. The largest proportionate increase, 27.9 per cent, was for plastics. Coal distillation products rose by 9.2 per cent, heavy chemicals by 9.9 per cent and fertilisers by 6.7 per cent.

In spite of increased native production imports into Canada also increased—by 18 per cent to $222,000,000 or £82,225,000. Purchases from the United States accounted for 87 per cent of the total and advanced by 16 per cent to $192,000,000 (£71,000,000). Supplies from Britain were only 8 per cent of the total but were a 50 per cent increase over 1952 and amounted to almost £6,670,000. Imports of drugs and pharmaceuticals were valued at $22,000,000, paints and pigments $21,000,000, fertilisers $12,000,000, dyes and tanning materials $11,000,000, acids $7,000,000 and explosives $2,000,000.

Exports failed to keep pace with imports, increasing by only 11 per cent to $138,000,000 (£51,000,000) with 60 per cent going to the US and 6 per cent coming to the UK. Fertilisers, at $43,000,000, accounted for almost one-third of the total.

Travelling through the provinces of Quebec, Ontario and Alberta, it was not hard to see where the increased production is coming from. During the past two years some £75,000,000 has been spent on either enlarging old plants or building new ones and around the main chemical producing centres the signs of recent building activity were easy to see. Practically all of the plants visited were shiny-new. Driving across the bleak prairies of Saskatchewan—'miles from no-where'—the author came across a newly-built salt factory. Half-an-

hour further down the road a small sign pointed the way—6 or 7 miles off the highway—to potash reserves which are believed to be the largest in the world and which may soon revolutionise the Canadian fertiliser industry.

At Montreal East a petrochemical plant owned jointly by British American Oil Co. and Shawinigan Chemicals Ltd. was completed a little over a year ago. The capacity of the plant is said to be 13,000,000 lb. of phenol and 8,000,000 lb. of acetone. It is also said to be the first phenol-from-cumene plant in the world to operate on a commercial scale.

Shell Oil Co. of Canada several months ago started to produce Canada's first isopropyl alcohol at a new plant—also at Montreal East. Rated capacity is said to be roughly 12,000,000 lb. of *iso*propyl alcohol and 8,000,000 lb. of acetone.

Dominion Tar & Chemical also have a year-old petrochemicals plant at Montreal East. Costing approximately £3,000,000 the plant is producing ethylene glycol and ethylene oxide at something less than its capacity of 30,000,000 lb. per year owing to fierce American competition.

At Ville La Salle, another Montreal suburb, Monsanto Canada Ltd. has been growing steadily during the past two or three years. In the autumn of 1952 a new research and pilot plant building was opened and in December of 1953 a large new petroleum additives plant went on stream.

At Varennes, 18 miles from Montreal, a plant designed to produce 3,000,000 lb. of pentaerythritol and 30,000,000 lb. of formaldehyde has been in operation for approximately one year. The plant belongs to St. Maurice Chemicals which is jointly owned by Heyden Chemical Corp. of New York and Shawinigan Chemicals Ltd.

Nearby, the Electric Reduction Co. has built a $5,000,000 phosphorus plant and the company's development department is now busy planning to make phosphorus compounds not yet made in Canada.

The scene in the neighbouring province of Ontario is equally one of great activity. Imperial Chemical Industries of Canada has started pilot plant production of Terylene and a 10,000,000 lb. per year plant at Millhaven will come on stream next summer. This plant will cost approximately £7,500,000.

Dow Chemical of Canada have just started to build a new £1,100,000 ammonia plant which will provide four times the present output—or over 100 tons per day. A new styrene monomer plant is now producing 2,000,000 lb. a month and the company's synthetic latex unit has been in production since the beginning of the year.

Roughly a year ago Cabot Carbon of Canada started production of Canada's first carbon black at its more than £1,000,000 plant at Sarnia. Capacity is said to be between 25,000,000 and 35,000,000 lb. per year.

Also at Sarnia is the Government-owned (Polymer Corporation) synthetic rubber plant. A large research laboratory was opened about 12 months ago and recently it was announced that extensive modifications to the plant, costing almost £750,000,

The new research and pilot plant building of Monsanto Canada Ltd.. at Villa La Salle, Montreal

The £5,600,000 polythene resin plant of Canadian Industries (1954) Ltd., near Edmonton

would be undertaken immediately to permit the use of a wider range of feedstocks. This project is to be completed next year.

At Niagara Falls, Noranda Mines will soon start up a £1,500,000 plant for the production of sulphur, sulphur dioxide and high grade iron sinter. It is expected that 350 tons of Canadian pyrites will be used per day. The sulphur dioxide will be used for sulphuric acid manufacture by North American Cyanamid.

In spite of the activity in Quebec and Ontario it is out in Alberta that the greatest changes have taken place. Thirteen years ago the province was almost exclusively agricultural and the name 'Alberta' meant farms and cattle ranches. Now the picture has changed dramatically and the name inspires thoughts of gushing oil wells, uranium, nickel, copper and gold mines and over-night millionaires. To the average man it also means chemicals, for it is in this province that some of the largest and most costly of the new chemical plants have been built, and it is these plants which have stolen most of the publicity.

At Edmonton, for instance, a new £30,000,000 plant has been producing petrochemicals, cellulose acetate, yarn and staple fibre for less than a year. The owners are Canadian Chemical Co. Ltd., a subsidiary of Celanese Corporation of America, and both the domestic and foreign markets are being thoroughly studied. The raw materials, alpha pulp and natural gas, are cheap, abundant and close at hand. Main chemical products are methanol and formaldehyde but a score of other organic chemicals are shipped in bulk.

Another large plant in the Edmonton area (surrounded on all sides by large and growing oil refineries) is a plant which consists of 14 buildings spread over a 40-acre site. Here Canada's first polythene resin is being produced from ethane. Even before the first shipments of polythene left the works last December it had been decided to increase capacity by one-third and output will soon be at the rate of more than 16,000,000 lb. per annum. The total cost of the plant will be £5,600,000.

Sixteen miles from Edmonton, at Fort Saskatchewan, Sherritt Gordon Mines are putting the finishing touches to a £9,000,000 nickel extraction plant which will use a new patented chemical leaching process. Large quantities of ammonia are needed for the process and Sherritt Gordon have built a large unit for processing ammonia from natural gas. This is a substance for which there is a very big demand both in Canada and in the Western United States and so steps are now being taken to double output. Soon 75 tons of surplus ammonia per day will be available for sale and, in addi-

tion, 70,000 tons of ammonium sulphate will be manufactured per year.

Consolidated Mining and Smelting is also keenly interested in ammonia and is expanding its output facilities at its Calgary nitrogen plant where natural gas from the Turner Valley is used. The project will increase fertiliser production by some 50,000 tons annually. A very ambitious plan to produce Canada's first urea is now on foot but the company has not announced any details as yet. The plant will probably cost several million pounds and will probably be located at Calgary. The firm's experts are now studying plants in several overseas countries.

Another recent Alberta development is the £1,300,000 chlorine and caustic soda plant belonging to Western Chemical Ltd. at Duverny, completed in 1952. It was recently announced that production of chlorine was to be increased from 10 to 20 tons per day and caustic soda from 12 to 25 tons. The plant can also produce some 10 tons of muriatic acid a day.

Elemental Sulphur

One other Alberta plant deserves mention and that is the Shell Oil Company's sulphur plant at Jumping Pound, near Calgary. In this plant, completed in 1952, 32 long tons of elemental sulphur of over 99.9 per cent purity are produced each day from sour natural gas. Owing to the great demand from pulp and paper manufacturers, however, the plant is being enlarged and the gas scrubbing plant will soon be treating 60,000,000 cu. ft. per day and 80 tons of sulphur daily will be recoverable from the waste and acid gas produced.

Writing in a recent issue of *The Financial Post* of Toronto, Mr. W. L. Dack, chemical editor, stated:

'Population and industry growth prompt bold moves; trade barriers, high transportation costs counterbalance for caution.

'. . . . Right now a good part of the chemical industry is inclined to catch its breath after the greatest expansion programme in its history. With some two dozen new plants across Canada no more than out of their early operating "jeans" management is more in a mood to chew reflectively for awhile on the piece of the future it has already bitten off.

'Here and there where things are a little tougher than had been anticipated there are the inevitable qualms. This is particularly true in the lustily growing young petrochemical industry which has sprung up from a $40,000,000 investment in one plant in 1943 to a $200,000,000-plus stake today in some 15 plants. In practically every case the new plants have ushered in new "made-in-Canada" products and are now having to shoulder competitive imported materials out of the way to get a foothold in the home market. This is being done at a time when surplus production in the US is depressing prices and forcing aggressive sales programmes.

'. . . . What looks like surplus capacity today has an uncanny habit of turning into shortages tomorrow in the chemical industry; the proximity of the US chemical giant, which has temporarily outpaced its own markets, can render the whole surplus-to-shortage routine that much more sudden and sweeping.

'More than in any other country the chemical leaders' hopes are riding high on the wave of new natural resources developments. The future of the industry, they know, will be wrapped up individually with new mining, oils, gas, power developments. Each new project will mean expanded chemicals demand all along the processing line to end consumer product.'

The above seems to be a fair summing up of the situation in the chemical industry of Canada at the present moment. While the future is not so starry-bright as it is for the oil and mining industries, prospects certainly are not discouraging. The industry may not make millionaires over-night but it is still a very good place in which to invest money or in which to work.—E.A.R.

Import Duties Suspended

THE import duties on certain iron and steel products are temporarily suspended until 18 September, 1954, by the Import Duties (Exemptions) (No. 3) Order, 1954. After consultations with the Iron and Steel Board, Her Majesty's Government have decided to continue to suspend the import duties on the same products for six months until 18 March, 1955, but the period for which the duty is suspended on cold rolled steel sheets of a value of less than £80 per ton will be one year until 18 September, 1955.

The order giving effect to this is the Import Duties (Exemptions) (No. 6) Order, 1954 (S.I. 1093). Copies of this order may be obtained from HM Stationery Office.

HOME

Viscoelasticity

The British Society of Rheology announce that a conference on 'Viscoelasticity in Solids, Emulsions and Solutions' will be held on Friday, 17 September, in the main chemistry lecture theatre of the Imperial College, Imperial Institute Road, London, S.W.7. Admission is free, and no tickets are needed. The conference follows the society's annual general meeting. It includes addresses on 'Rubbers and Fibres' (with practical demonstrations), 'Relaxation Phenomena in Organic Glasses and High Molecular Weight Materials,' 'Retardation in Paint and Varnish Media' and 'Viscoelastic Properties of Solutions of Polymethylmethacrylate in certain Solvent/Non-Solvent Mixtures.'

I.C.I. Extensions

Extensions to I.C.I. Ltd.'s sulphuric acid plant at Billingham will be completed this year and will increase output by 73,500 tons annually. The firm's yearly production of sulphuric acid will then be 180,000 tons. The plant will also provide 69,000 tons of clinker for the cement works while output from the company's anhydrite mine will be increased by 127,000 tons to meet the needs of the new sulphuric acid kiln.

To Exchange Knowledge

Costain-John Brown Ltd. and Petrocarbon Developments Ltd. have entered into an arrangement with Friedrich Uhde, GmbH, the well-known German chemical plant designers and engineers for the mutual use and exchange of processes and process designs, especially in the field of nitrogen and petrochemicals. The full range of these processes and designs, together with the plants embodied in them will thus be available throughout the British Commonwealth.

Chemical Machinery Exports

Exports of gas and chemical machinery during July were worth £241,525; the total for the first seven months of the year reached £1,529,609, compared with £1,269,444 in the same period of last year. Imports valued £11,954 for the month, out of a total of £275,535 (£692,356) between January and July.

Cement Dust Complaint

Traders in the Bexley area of Kent are intensifying their campaign against the cement dust nuisance. To support their contention that cement factories need not discharge large amounts of dust over the surrounding countryside, visits have been made to the Padeswood district of North Wales and a report of the findings has been prepared. Copies of this report are being sent to local members of Parliament and to 14 local authorities. It is claimed that Kentish cement factories are discharging unnecessarily large amounts of cement dust into the atmosphere and that this is causing losses to local fruit growers and others.

Caught Smoking

Two Manchester dyeing firms were fined by the Stipendiary Magistrate (Mr. F. Bancroft Turner) on 18 August, for putting out black smoke from their chimneys. The Ashenhurst Dyeing Company, of Blackley New Road, Manchester, was fined 20s., and Manchester Dyers, of Middleton Road, Cheetham Hill, Manchester, were fined £5.

Pest Control Agreement

Baywood Chemicals Ltd., Brettenham House, Lancaster Place, Strand, London, W.C.2, has been formed as a private limited company to develop a technical and marketing association between Farbenfabriken Bayer, of Leverkusen, Germany, and Burt, Boulton & Haywood Ltd. It will be concerned with pest, disease, and weed control in agriculture and horticulture. The spray chemicals of both the manufacturing companies are to be distributed at the outset by the selling organisation of Burt, Boulton & Haywood.

Courtaulds Increasing Research Facilities

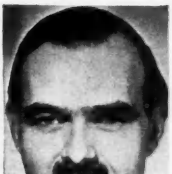
Courtaulds Ltd. are providing further facilities for technological research and development work on their various synthetic staple fibres at Arrow Mill, Rochdale. The project, which is expected to be finished by the early part of 1956, involves putting up a new building, providing some 85,000 sq. ft. of floor space, on land owned by the company adjacent to the mill.

· PERSONAL ·

Pressure of other work has caused MR. W. H. LANGWELL to relinquish his duties as secretary of the Chemical Club, Whitehall Court, London, S.W.1. The committee has appointed MR. ERIC CHILMAN to succeed Mr. Langwell as from 1 July. Mr. Langwell, who has been secretary for several years, is a director of the Sharlandy Chemical Co. Ltd. Mr. Chilman is a former editor of the journal *Food*.

MR. H. B. F. DIXON, of King's College, and DR. M. R. J. SALTON, of St. John's College, have been appointed demonstrators in biochemistry in the University of Cambridge.

MR. J. R. A. GLENN, joint managing director of Imperial Chemical Industries of Australia and New Zealand since November, 1953, will arrive in England at the beginning of September and will be in this country until 17 October. An engineering graduate of Melbourne University, Mr. Glenn played an important part in the construction of wartime factories in Australia, including the ammonia plants run by ICIANZ on behalf of the Government. After the war he worked in conjunction with I.C.I. Nobel Division on the design of the ICIANZ modernised explosives works near Melbourne. As controller of the Nobel Group of ICIANZ from 1948 to 1950 he was responsible for extensions to their sporting ammunition plant, and as technical general manager of the company from 1950 to 1953 was closely concerned with expansion of production capacity throughout their factories. Mr. Glenn's visit is of a routine nature as he has paid several visits to this country since the war. He will visit several of the Divisions as well as Imperial Chemical House.



DR. A. NEUBERGER, head of the Biochemistry Division of the National Institute for Medical Research, has been appointed to the Chair of Chemical Pathology in the University of London, tenable at St. Mary's Hospital Medical School from 1 October, 1955.

DR. J. D. MCGEE, research engineer in EMI research laboratories, has been appointed to the Chair of Instrument Technology in the University of London, tenable at Imperial College.

Appointment of MR. GEOFFREY K. WRIGHT as sales manager of B.A.-Shawinigan Ltd. has been announced. Mr. Wright, who has his headquarters at the B.A.-Shawinigan plant in Montreal East, also assumes responsibility for traffic, advertising and public relations. Mr. Wright joined Shawinigan Chemicals Ltd. as a research chemist at Shawinigan Falls in 1914. In 1951 he was loaned to the Canadian Government as chief of the chemicals and explosives division in the Washington office of the Canadian Government Department of Defence Production, and a year later returned to Shawinigan Chemicals. Since then he has been in charge of sales for both B.A.-Shawinigan Ltd. and St. Maurice Chemicals Ltd.

Godfrey L. Cabot Inc., Boston, Massachusetts, chemicals manufacturing firm, has announced the appointment of MR. HARRY J. COLLYER as technical representative for continental Europe and the British Isles. From 1 September, Mr. Collyer will transfer his headquarters from Boston to the offices of Cabot Carbon Ltd., at Stanlow, near Chester, England. Upon graduating with a B.S. degree in chemical engineering in June, 1937, Mr. Collyer joined the research and development staff of the Colgate-Palmolive-Peet Company, New Jersey. From 1942 he served as research assistant in the division of Industrial Co-operation, at the Massachusetts Institute of Technology, Cambridge, Massachusetts, working particularly with the development of synthetic rubbers, and specifically, the reclaiming process. Mr. Collyer joined the Cabot organisation in January, 1946. After extensive experience in rubber and plastics testing and in technical and sales service work, in January, 1950, he was appointed

technical manager of Cabot Carbon Ltd., Cabot's British subsidiary, in charge also of technical service. In July, 1952, he returned to Boston as manager of Technical Service, a position which he has held until the present time.

MR. C. A. O. RIDEAL, director of sales, May & Baker Ltd., recently completed 25 years' service with the company and, on his return from a business trip to the Americas, was presented with a gold watch by the managing director, DR. T. B. MAXWELL, to mark the occasion. Mr. Rideal joined the company at Battersea in 1929. In 1939 he was made commercial manager and two years later he was appointed to the board of directors.

Obituary

It is with sincere regret that we announce the death, after only a few hours of illness, of MR. SYDNEY REGINALD PRICE, M.B.E., M.A., on 9 August. Mr. Price was very well known in British chemical circles, having been hon. general secretary of the British Association of Chemists from 1920 to 1923, chairman of the Council of the Association from 1925 to 1936, and president from 1930 to 1932. In 1948 he was awarded the Association's Hinchley Medal for outstanding service to the Association. At the time of his death he had been a member of the Council of the British Chemical and Dyestuffs Traders' Association for more than 14 years. Mr. Price was born in Wellington, Somerset, and was educated at Wellington School. In 1905 he won an open scholarship to Cambridge University (an Exhibition at Sydney Sussex College) being the first student from Wellington to win such an honour. In view of his age he did not take this up but in the following year he gained a three-year Major Open Scholarship at Clare College, Cambridge, which he entered in 1907. At Cambridge he was a 'Double First,' was elected to a Dr. Cole Scholarship in 1910 and was awarded the Frank Smart Prize for Botany in 1911. During the First World War Mr. Price was a member of the Explosives Department of the Ministry of Munitions for his services in which he was awarded the M.B.E. After the war, he served for a time with the Munitions Disposal Board and then joined in forming the firm of chemical merchants, Price, Stutfield & Co. Ltd., of 110 Fenchurch Street, London, of which he remained joint managing director until his death.

The tragic death of ANTHONY LEWIS LEVY, B.Sc., Ph.D., A.R.C.S., D.I.C., A.R.I.C. occurred last week in the State of Washington, USA. Dr. Levy lost his life while rescuing a companion who had slipped into a crevasse and broken a leg while a party was climbing Mount Olympus. Born at Romford, Essex, Dr. Levy graduated from the Imperial College of Science and in 1949 attended the Carlsberg Institute in Copenhagen as a Rockefeller Fellow. For the past few years Dr. Levy has been working at the Hormone Research Laboratory, University of California, and on Monday he was described as 'one of the world's most brilliant research chemists,' by Dr. C. H. Li, the University of California biochemist, who did much preliminary work on ACTH which is used in the treatment of arthritis. 'All the recent work in ACTH is attributed to Dr. Levy,' he said. 'He had made enormous progress in working out the final phase for the synthesis of ACTH, and the entire future of the work on this will be handicapped by his death, which is a great loss to international chemistry.' Dr. Levy was 30 years of age and unmarried.

The death has occurred in a hospital at Greenock of MR. PETER FERGUSON GILCHRIST, J.P., The Cairn, Cloch Road, Gourock, who was Director of Starch with the Ministry of Food during the second world war. Mr. Gilchrist, who was 78, began his career in the starch works of Messrs. William MacKean Ltd., Caledonia Street, Paisley, and was appointed a director of the company in 1913. When the business became part of the Brown and Polson group, he became a director of the larger organisation, and retired in 1937. At the outbreak of war he was appointed Assistant Director of Starch and was later promoted to the senior post.

• OVERSEAS •

Germanium Survey

Canada is conducting a survey of all Canadian sources of germanium in view of the mounting demand for defence purposes and by the electronics industry.

Oil & Rust Solvents

Our South African correspondent reports that Ross and Reunert (Pty.) Ltd., Isipingo, near Durban, ..., are manufacturing waterproofing solutions, oil and rust solvents, boiler de-scaling compounds, water softeners and purifiers and automobile radiator cleaners. The oil and rust solvent is an oil-bound item similar to such products made in Britain. It is claimed to be well up to the British standard and is being used locally in sugar mills and other industries. The waterproofing solution is designed to apply by brush or spray-gun, and the de-scaling compound is designed to remove scale, rust and scale-forming salts from marine and industrial boilers. It is packed in 5-, 25- and 45-gallon drums and is also sold in cube form.

US Nickel Negotiations

The US General Services Administration is reported to be negotiating with the International Nickel Company of Canada to treat the nickel concentrates stockpile at the Fort Saskatchewan refinery of Sherritt Gordon Mines. At present Sherritt's Lynn Lake mine is producing at a greater rate than anticipated, and enough concentrates are being delivered to keep the new refinery busy without di..ng into the stockpile. The US, which ... effect own the stockpile, is believed to want the metal fairly soon.

$200,000 from Chemical Plant

An income of at least $200,000 a year is expected wh... the new chemical plant near the Etzikon gas holdings is completed, Albert A. Weiss, general secretary, told the annual meeting of Mideon Oil & Gas Co. Ltd. Income was about $50,000 in 1953. Mr. Weiss said the new plant which is planned by Commercial Solvents, Eastman Dillion & Ford and Bacon & Davis, will require 16 million cubic feet of gas a day. The wells in which the company has a half interest now can supply this gas. The new $20,000,000 fertiliser plant should be ready within a year, he said.

Israel Production Figures

While in the first quarter of 1953 4,300 tons of refined oil were produced in Israel, only 3,300 tons of refined oil were produced during the corresponding period in 1954. Other production figures comparing the first quarters of 1953 and 1954 were: superphosphates rose by more than 100 per cent, sulphuric acid from 2,500 tons to 7,000 tons, phosphates from 3,600 tons to 12,650 tons, silicate bricks from 5,100,000 to 8,300,000; cement production rose by approximately 45 per cent, while plate glass production dropped considerably.

Copper Refinery Offer

The Chilean Ministry of Mines has received an offer from the German company, Montan, to co-operate in building a copper refinery with a yearly capacity of 30,000 metric tons. Montan has offered $2,000,000 worth of machinery and has asked Chile to provide 250,000,000 pesos in buildings. The Ministry of Mines has made an alternative offer of five-year repayment if the German company finances the whole deal.

US to Buy More Lead & Zinc

President Eisenhower has rejected a recommendation by the Tariff Commission that large increases in duty should be imposed on imported lead and zinc. He has, instead of raising the duty, ordered increased purchases of both metals for the US stockpile. The increased stockpiling programme, the President said, was to help domestic production, and conferences will be held with other producing countries to ensure they do not try to take unfair advantage of it.

French Tin Proposal Criticised

Malaya's Federal Legislative Council has agreed to ask the UK Government to ratify the International Tin Agreement on behalf of the Federation. During the meeting, several members representing the mining industry criticised the French proposal, which has been accepted by the industry, for lowering the ceiling price from £880 to £840 a ton. It was pointed out that the majority of the Malayan industry was in favour of ratifying the agreement, because it did not want to see price fluctuations.

Publications & Announcements

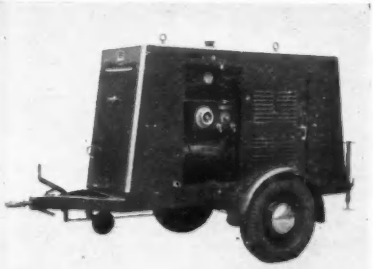
SANKEY'S fire cements, comprising the seven grades of Pyruma cement, Aluma cement, and Siluma hot patching cement are described in a new leaflet published by the manufacturers, J. H. Sankey & Son, Ltd., Ilford, Essex. Notes on use are given for a number of different applications, and copies are obtainable free.

* * *

AMONG new additions to the catalogue of BDH (Laboratory Chemicals Group, Poole, Dorset) are 2-butyne-1,4-diol, a useful intermediate available in technical quality; ethylene carbonate, a solvent of unusually wide applications; furil; and fructose-1,6-diphosphoric acid, dibarium salt. The company also announce that Teepol 'L' is now available; so also are standard grades of Amberlite ion-exchange resins in addition to the specially prepared analytical resins.

* * *

THE Quasi-Arc Co. Ltd. have recently introduced a new range of diesel engine driven arc welding sets incorporating the well-known Fordson industrial diesel engine. The engine is fitted with electric starting, has a speed of 1,500 rpm. and is 34 bhp. The housing of the sets is of latest streamlined design with louvred sliding doors to give easy access to the engine and generator. A notable feature of these sets is the newly developed type of two-wheeled bolted on undergear with over-run braking mechanism; this undergear is assembled with the unit. The DE.300 (current range 20-300 amps.) incorporates the Quasi-Arc G.300 generator with dual control of voltage and welding current. The DE.400 (current range 60-400 amps.) has the Quasi-Arc GH.400 generator with concentric controls.



The DE.400 set complete with undergear, with the jockey wheel and jacks raised ready for towing. (Picture by Quasi-Arc Company Ltd.)

* * *

A NEW leaflet, No. 71a, recently issued by The Moritz Chemical Engineering Co. Ltd. on their B.G. Grinding Mill is now available. This mill is of the roller type, silent in operation by compression and friction with air selector and cyclone. It is recommended for use in fine grinding of all kinds of minerals, inorganic or organic. Capacities are 2 to 25 tons an hour.

* * *

SHARPLES Centrifuges Ltd., of Tower House, Woodchester, Stroud, Gloucestershire, announce the publishing of a new report, No. 2054, describing the industrial applications of the Super-Centrifuge. This report is designed to illustrate the many existing applications of the Super-Centrifuge and to show, by analogy, how it is likely to be of assistance in new problems. For that reason it should be of particular interest to research chemists and development engineers, as well as to those concerned in production. The illustrations chosen cover a wide field of activity in the chemical, engineering, and process industries and include such operations as the selective clarification of paints and enamels, the dehydration of water gas tar, the recovery of silver salts from waste photographic emulsions, the recovery of platinum from 'contact mass,' the removal of corpuscles from blood albumin, and the recovery and regeneration of machine shop cutting oil, electrical insulating oil, and lubricating oil.

* * *

THREE reports recently unclassified by the Atomic Energy Research Establishment, and obtainable from Bedford Chambers, Covent Garden, are concerned with the model testing of electromagnetic flowmeters, which is particularly necessary when these are handling liquid metals; AC liquid metal pumps for laboratory use, two types, a leakage reactance model and a combined pump and transformer, being described; and the fission yields of ^{103}Ru and ^{106}Ru.

British Chemical Prices

LONDON. — Conditions on the industrial chemicals market are generally unchanged both as regards trading and prices. New business for home account is reasonably good, with contract deliveries being steadily called for. Inquiry for shipment continues to be of fair dimensions and the supply position, in most sections of the market, is adequate. On the coal-tar products market there is no lack of buying interest for phenol, cresol and the pyridines, while naphthalene and pitch are in good home demand with an improving inquiry in evidence for the latter.

MANCHESTER.—The past week has seen little change in trading conditions on the Manchester market for heavy chemical products. Holiday influences are having less effect on the movement of supplies, though there is some continued uneasiness apparent as to the outlook for business in chemicals with the cotton textile and allied industries. For the present, they are calling for steady deliveries of a wide range of products, as are most other leading outlets. Prices generally are well maintained. No more than a moderate business continues to be done in fertiliser materials. The demand for the leading tar products is on steady lines.

GLASGOW.—Trading generally is still on the quiet side with the exception of some branches of the textile trade and, on the whole, conditions are much quieter than one would expect. Prices have remained firm and the bulk of the business during the past week has been centred mainly with agricultural requirements. With regard to export, there has been very little demand.

General Chemicals

Acetic Acid.—Per ton : 80% technical, 10 tons, £86. 80% pure, 10 tons, £92 ; commercial glacial 10 tons, £94 ; delivered buyers' premises in returnable barrels ; in glass carboys, £7 ; demijohns, £11 extra.

Acetic Anhydride.—Ton lots d/d, £130 per ton.

Alum.—Ground, about £23 per ton, f.o.r. MANCHESTER : Ground, £25.

Aluminium Sulphate.—Ex works, £14 15s. per ton d/d. MANCHESTER : £14 10s. to £17 15s.

Ammonia, Anhydrous.—1s. 9d. to 2s. 3d. per lb.

Ammonium Bicarbonate.—2 cwt. non-returnable drums ; 1 ton lots £58 per ton.

Ammonium Chloride. — Grey galvanising, £31 5s. per ton, in casks, ex wharf. Fine white 98%, £25 to £27 per ton. See also Salammoniac.

Ammonium Nitrate.—D/d, £33 per ton.

Ammonium Persulphate. — MANCHESTER : £6 5s. per cwt. d/d.

Ammonium Phosphate.—Mono- and di-, ton lots, d/d, £97 and £94 10s. per ton.

Antimony Sulphide.—Golden, d/d in 5-cwt. lots as to grade, etc., 2s. 2d. to 2s. 8d. per lb. Crimson, 3s. 4½d. to 4s. 5½d. per lb.

Arsenic.—Per ton, £45 5s. nominal, ex store.

Barium Carbonate.—Precip., d/d : 4-ton lots, £39 per ton ; 2-ton lots, £39 10s. per ton, bag packing.

Barium Chloride.—£42 15s. per ton in 2-ton lots.

Barium Sulphate (Dry Blanc Fixe).—Precip., 4-ton lots, £42 10s. per ton d/d ; 2-ton lots, £43 per ton d/d.

Bleaching Powder.—£27 per ton in casks (1 ton lots).

Borax.—Per ton for ton lots, in free 140-lb. bags, carriage paid : Anhydrous, £58 10s.; in 1-cwt. bags ; commercial, granular, £38 10s. ; crystal, £41 ; powder, £42 ; extra fine powder, £43 ; BP, granular, £47 10s. ; crystal, £50 ; powder, £51 ; extra fine powder, £52.

Boric Acid.—Per ton for ton lots in free 1-cwt. bags, carriage paid : Commercial, granular, £67 ; crystal, £75 ; powder, £72 10s. ; extra fine powder, £74 10s. ; BP, granular, £80 ; crystal, £84 10s. ; powder, £87 ; extra fine powder, £86 10s.

Calcium Chloride.—70/72% solid £12 10s. per ton.

Chlorine, Liquid.—£32 per ton d/d in 16/17-cwt. drums (3-drum lots).

Chromic Acid.—2s. 0⅝d. per lb., less 2½%, d/d UK, in 1-ton lots.

Chromium Sulphate, Basic.—Crystals, £65 6s. 8d. per ton d/d UK, in lots of 1 ton and over.

Citric Acid.—1-cwt. lots, 205s. cwt. ; 5-cwt. lots, 200s. cwt.

Cobalt Oxide.—Black, delivered, 13s. per lb.

Copper Carbonate.—MANCHESTER : 2s. 1d. per lb.

Copper Sulphate.—£77 per ton f.o.b., less 2% in 2-cwt. bags.

Cream of Tartar.—100%, per cwt., about £9 12s.

Formaldehyde.—£37 5s. per ton in casks, d/d.

Formic Acid.—85%, £86 10s. in 4-ton lots, carriage paid.

Glycerine.—Chemically pure, double distilled 1.260 S.G., £14 7s. 6d. per cwt. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

Hydrochloric Acid.—Spot, about 12s. per carboy d/d, according to purity, strength and locality.

Hydrofluoric Acid.—59/60%, about 1s. to 1s. 2d. per lb.

Hydrogen Peroxide.—27.5% wt. £124 10s. per ton. 35% wt. £153 per ton d/d. Carboys extra and returnable.

Iodine.—Resublimed B.P., 15s. 4d. per lb. in 28 lb. lots.

Iodoform.—24s. 4d. per lb. in 28 lb. lots.

Lactic Acid.—Pale tech., 44 per cent by weight £122 per ton ; dark tech., 44 per cent by weight £73 per ton ex works 1-ton lots ; dark chemical quality 44 per cent by weight £109 per ton, ex works ; usual container terms.

Lead Acetate.—White : About £140 per ton.

Lead Nitrate.—About £120-£125, 1-ton lots.

Lead, Red.—Basis prices per ton. Genuine dry red lead, £126 5s. ; orange lead, £138 5s. Ground in oil : red, £144 10s. ; orange, £156 10s.

Lead, White.—Basis prices : Dry English in 5-cwt. casks, £132 5s. per ton. Ground in oil : English, 1-cwt. lots, 170s. per cwt.

Lime Acetate.—Brown, ton lots, d/d, £40 per ton ; grey, 80-82%, ton lots, d/d, £45 per ton.

Litharge.—£128 5s. per ton, in 5-ton lots.

Magnesite.—Calcined, in bags, ex works, about £28 per ton.

Magnesium Carbonate.—Light, commercial, d/d, 2-ton lots, £84 10s. per ton, under 2 tons, £92 per ton.

Magnesium Chloride.—Solid (ex wharf), £14 10s. per ton.

Magnesium Oxide.—Light, commercial, d/d, under 1-ton lots, £245 per ton.

Magnesium Sulphate.—£15 to £16 per ton.

Mercuric Chloride.—Technical Powder, 26s. 3d. per lb. in 5-cwt. lots ; smaller quantities dearer.

Mercury Sulphide, Red.—29s. 3d. per lb., for 5-cwt. lots.

Nickel Sulphate.—D/d, buyers U.K. £154 per ton. Nominal.

Nitric Acid.—£35 to £40 per ton, ex-works.

Oxalic Acid.—Home manufacture, minimum 4-ton lots, in 5-cwt. casks, £129 10s. per ton, carriage paid.

Phosphoric Acid.—Technical (S.G. 1.700) ton lots, carriage paid, £92 per ton ; B.P. (S.G. 1.750), ton lots, carriage paid, 1s. 3½d. per lb.

Potash, Caustic.—Solid, £94 10s. per ton for 1-ton lots ; Liquid, £37 5s.

Potassium Carbonate. — Calcined, 96/98%, about £63 per ton for 1-ton lots, ex-store.

Potassium Chloride.—Industrial, 96%, 1-ton lots, about £22 per ton.

Potassium Dichromate.—Crystals and granular, 11¾d. per lb., in 1-ton lots, d/d UK.

Potassium Iodide.—B.P., 13s. 1d. per lb. in 28-lb. lots ; 12s. 7d. in cwt. lots.

Potassium Nitrate.—Small granular crystals, 81s. per cwt. ex store, according to quantity.

Potassium Permanganate.—B.P., 1s. 9½d. per lb. for 1-cwt. lots ; for 3 cwt. and upwards, 1s. 8½d. per lb. ; technical, £8 7s. per cwt. ; for 5-cwt. lots.

Sal ammoniac.—Dog-tooth crystals, £70 per ton ; medium, £67 10s. per ton ; fine white crystals, £21 10s. to £22 10s. per ton, in casks.

Salicylic Acid. — MANCHESTER : Technical 2s. 7d. per lb. d/d.

Soda Ash.—58% ex-depot or d/d, London station, about £15 5s. 6d. per ton, 1-ton lots.

Soda, Caustic.—Solid 76/77% ; spot, £26 to £28 per ton d/d. (4 ton lots).

Sodium Acetate.—Commercial crystals, £80 to £85 per ton d/d.

Sodium Bicarbonate.—Refined, spot, £13 10s. to £15 10s. per ton, in bags.

Sodium Bisulphite.—Powder, 60/62%, £40 per ton d/d in 2-ton lots for home trade.

Sodium Carbonate Monohydrate.—£25 per ton d/d in minimum ton lots in 2-cwt. free bags.

Sodium Chlorate.—£74 to £78 per ton, according to quantity.

Sodium Cyanide.—100% basis, 9½d. to 10½d. per lb.

Sodium Dichromate.—Crystals, cake and powder, 10d. lb. Net d/d UK, minimum 1-ton lots; anhydrous, 11½d. lb. Net del. d/d UK, minimum 1-ton lots.

Sodium Fluoride.—D/d, £4 10s. per cwt.

Sodium Hyposulphite.—Pea crystals £34 a ton; commercial, 1-ton lots, £28 per ton carriage paid.

Sodium Iodide.—BP, 15s. 1d. per lb. in 28-lb. lots.

Sodium Metaphosphate (Calgon).—Flaked, loose in metal drums, £127 per ton.

Sodium Metasilicate.—£22 15s. per ton, d/d UK in ton lots.

Sodium Nitrate.—Chilean Industrial, over 98% 6-ton lots, d/d station, £27 10s.

Sodium Nitrite.—£32 per ton (4-ton lots).

Sodium Percarbonate.—12½% available oxygen, £8 2s. 10½d. per cwt. in 1-cwt. drums.

Sodium Phosphate.—Per ton d/d for ton lots: Di-sodium, crystalline, £37 10s., anhydrous, £81; tri-sodium, crystalline, £39 10s., anhydrous, £79.

Sodium Prussiate.—1s. to 1s. 1d. per lb. ex store.

Sodium Silicate.—£6 to £11 per ton.

Sodium Sulphate (Glauber's Salt).—About £8 10s. per ton d/d.

Sodium Sulphate (Salt Cake).—Unground. £6 per ton d/d station in bulk. MANCHESTER: £6 10s. per ton d/d station.

Sodium Sulphide.—Solid, 60/62%, spot, £32 2s. 6d. per ton, d/d, in drums; broken, £33 2s. 6d. per ton, d/d, in drums.

Sodium Sulphite.—Anhydrous, £59 per ton; pea crystals, £37 12s. 6d. per ton d/d station in kegs; commercial, £23 7s. 6d. per ton d/d station in bags.

Sulphur.—Per ton for 4 tons or more, ground, £23 11s. to £26, according to fineness.

Tartaric Acid.—Per cwt.: 10 cwt. or more, £11.

Titanium Oxide.—Standard grade comm., with rutile structure, £155 per ton; standard grade comm., £135 per ton.

Zinc Oxide.—Maximum price per ton for 2-ton lots, d/d: white seal, £98 10s.; green seal, £97 10s.; red seal, £96.

Solvents and Plasticisers

Acetone.—Small lots: 5-gal. drums, £129 per ton; 10-gal. drums, £119 per ton. In 40/45-gal. drums less than 1 ton. £94 per ton; 1 to 9 tons, £91 per ton; 10 to 49 tons, £89 per ton; 50 tons and over, £88 per ton. All per ton d/d.

Butyl Acetate BSS.—£173 per ton, in 1-ton lots; £171 per ton, in 10-ton lots.

***n*-Butyl alcohol, BSS.**—10 tons, in drums, £161 10s. per ton d/d.

***sec.*-Butyl Alcohol.**—5 gal. drums £159; 40 gal. drums: less than 1 ton £124 per ton; 1 to 10 tons £123 per ton; 10 tons and over £122 per ton; 100 tons and over £120 per ton.

***tert.*-Butyl Alcohol.**—5 gal. drums £195 10s. per ton; 40/45 gal. drums: less than 1 ton £175 10s. per ton; 1 to 5 tons £174 10s. per ton; 5 to 10 tons, £173 10s.; 10 tons and over £172 10s.

Diacetone Alcohol.—Small lots: 5 gal. drums, £177 per ton; 10 gal. drums, £167 per ton. In 40/45 gal. drums; less than 1 ton, £142 per ton; 1 to 9 tons, £141 per ton; 10 to 50 tons, £140 per ton; 50 to 100 tons, £139 per ton; 100 tons and over, £138 per ton.

Dibutyl Phthalate.—In drums, 10 tons, 2s. per lb. d/d; 45 gal. drums, 2s. ¾d. per lb. d/d.

Diethyl Phthalate.—In drums, 10 tons, 1s. 10½d. per lb. d/d; 45 gal. drums, 1s. 11¾d. per lb. d/d.

Dimethyl Phthalate.—In drums, 10 tons, 1s. 7½d. per lb. d/d; 45 gal. drums, 1s. 8¾d. per lb. d/d.

Dioctyl Phthalate.—In drums, 10 tons, 2s. 8d. per lb. d/d; 45 gal. drums, 2s. 9½d. per lb. d/d.

Ether BSS.—In 1 ton lots, 1s. 11d. per lb; drums extra.

Ethyl Acetate.—10 tons lots, d/d, £135 per ton.

Ethyl Alcohol (PBS 66 o.p.).—Over 300,000 p. gal., 2s. 9d.; 2,500-10,000 p. gal., 2s. 11½d. per p. gal., d/d in tankers. D/d in 40/45-gal. drums, 1d. p.p.g. extra. Absolute alcohol (75.2 o.p.) 5d. p.p.g. extra.

Methanol.—Pure synthetic, d/d, £43 15s. per ton.

Methylated Spirit.—Industrial 66° o.p.: 500 gal. and over in tankers, 4s. 10d. per gal. d/d; 100-499 gal. in drums, 5s. 2½d. per gal. d/d. Pyridinised 64 o.p.: 500 gal. and over in tankers, 5s. 0d. per gal. d/d; 100-499 gal. in drums, 5s. 4½d. per gal. d/d.

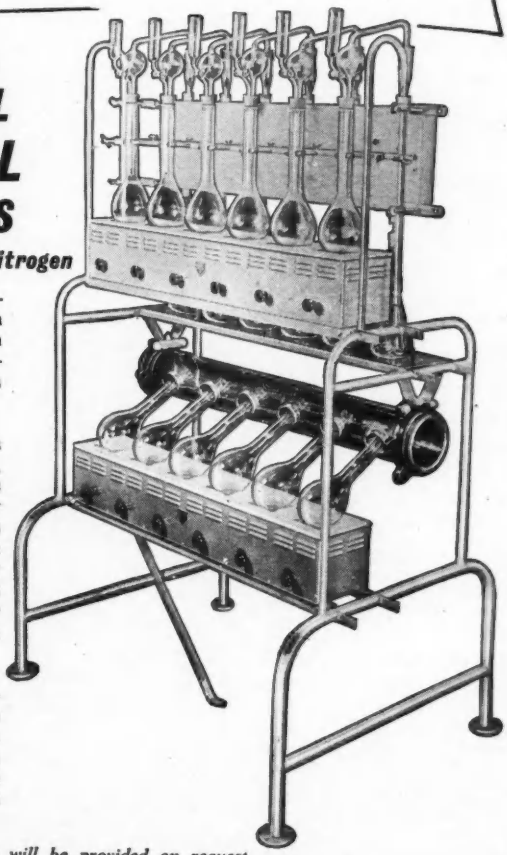
Methyl Ethyl Ketone.—10-ton lots, £141 per ton d/d

Methyl *iso*Butyl Ketone.—10 tons and over £162 per ton.

B.T.L. INSTRUMENT INFORMATION

THE B.T.L. UNIVERSAL KJELDAHL APPARATUS

for the determination of nitrogen



- comprises a range of interchangeable components which can be readily assembled in the form of digestion, distillation or combined digestion and distillation units.
- The range of components cover gas or electric heating, various types of condensers and splash heads, and water manifolds. The components are supplied for assembly in units of six tests. For larger installations two or more units may be coupled together for any desired number of tests in multiples of six.
- The illustration shows an example of the use of the range of components in producing a typical Kjeldahl assembly. An extension frame is fitted at one end so that further six test assemblies can be added.

Full details will be provided on request

BTL

Member of SCIEX

BAIRD & TATLOCK

(LONDON) LTD.

Scientific Instrument Makers

FRESHWATER ROAD, CHADWELL HEATH, ESSEX

***iso*Propyl Acetate.**—In drums, 10 tons, £130 per ton d/d ; 45 gal. drums, £135 per ton d/d.

***iso*Propyl Alcohol.**—Small lots : 5 gal. drums, £118 per ton ; 10-gal. drums, £108 per ton ; in 40-45 gal. drums ; less than 1 ton, £83 per ton ; 1 to 9 tons £81 per ton ; 10 to 50 tons, £80 10s. per ton 50 tons and over, £80 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, about 3s. per lb. Crimson, 3s. 4½d. to 4s. 5½d. per lb.

Carbon Bisulphide.—£61 to £67 per ton, according to quality.

Carbon Black.—8d. to 1s. per lb., according to packing.

Carbon Tetrachloride.—Ton lots, £76 10s. per ton.

India-rubber Substitutes.—White, 1s. 6½d. to 1s. 10½d. per lb. ; dark, 1s. 4½d. to 1s. 8d. per lb.

Lithopone.—30%, about £54 per ton.

Mineral Black.—£7 10s. to £10 per ton.

Sulphur Chloride.—British, £55 per ton.

Vegetable Lamp Black.—£64 8s. per ton in 2-ton lots.

Vermilion.—Pale or deep, 15s. 6d. per lb. for 7-lb. lots.

Nitrogen Fertilisers

Ammonium Sulphate.—Per ton, in 6-ton lots, d/d farmer's nearest station, August, £17 12s. 6d.

Compound Fertilisers.—Per ton in 6 ton lots, d/d farmer's nearest station, I.C.I. Special No. 1 £27 9s.

'Nitro-Chalk.'—£15 14s. per ton in 6-ton lots, d/d farmer's nearest station.

Sodium Nitrate.—Chilean agricultural for 6-ton lots, d/d nearest station, July to September, £25 15s. per ton.

Coal-Tar Products

Benzole.—Per gal., minimum of 200 gals. delivered in bulk, 90's, 5s. ; pure, 5s. 4d. as from 1 September.

Carbolic Acid.—Crystals, 1s. 4d. to 1s. 6½d. per lb. Crude, 60's, 8s. MANCHESTER : Crystals, 1s. 4½d. to 1s. 6½d. per lb., d/d crude, 8s. naked, at works.

Creosote.—Home trade, 1s. to 1s. 4d. per gal., according to quality, f.o.r. maker's works. MANCHESTER : 1s. to 1s. 8d. per gal.

Cresylic Acid.—Pale 99/99½%, 5s. 8d. per gal. ; 99.5/100%, 5s. 10d. American, duty free, for export, 5s. to 5s. 8d. naked at works.

Naphtha.—Solvent, 90/160°, 4s. 10d. per gal. for 1000-gal. lots ; heavy, 90/190°, 3s. 9½d. per gal. for 1000-gal. lots, d/d. Drums extra ; higher prices for smaller lots.

Naphthalene.—Crude, 4-ton lots, in sellers bags, £15 1s. 9d. to £22 per ton, according to m.p. ; hot pressed, £34 per ton in bulk ex-works ; purified crystals, £53 per ton d/d.

Pitch.—Medium, soft, home trade, 160s. per ton f.o.r. suppliers' works ; export trade 230s. per ton f.o.b. suppliers port.

Pyridine.—90/160°, 32s. 6d. per gal.

Toluol.—Pure, 5s. 7d. ; 90's, 4s. 10d. per gal., d/d. MANCHESTER : Pure, 5s. 8d. per gal. naked.

Xylol.—For 1000-gal. lots, 5s. 8d. to 5s. 10d. per gal., according to grade, d/d.

Intermediates and Dyes
(Prices Nominal)

***m*-Cresol 98/100%.**—3s. 9d. per lb. d/d.

***o*-Cresol 30/31° C.**—1s. 4d. per lb. d/d.

***p*-Cresol 34/35° C.**—3s. 9d. per lb. d/d.

Dichloraniline.—3s. 6d. per lb.

Dinitrobenzene.—88/89°C., 1s. 11d. per lb.

Dinitrotoluene.—S.P. 15° C., 1s. 11½d. per lb. ; S.P. 26° C., 1s. 3d. per lb. S.P. 33°C., 1s. 1½d. per lb. ; S.P. 66/68°C., 1s. 9d. per lb.

***p*-Nitraniline.**—4s. 5½d. per lb.

Nitrobenzene.—Spot, 9½d. per lb. in 90-gal. drums, drums extra, 1-ton lots d/d buyers' works.

Nitronaphthalene.—2s. per lb.

***o*-Toluidine.**—1s. 9d. per lb., in 8/10-cwt. drums, drums extra.

***p*-Toluidine.**—5s. 6d. per lb., in casks.

Dimethylaniline.—3s. 1d. per lb., packed in drums, carriage paid.

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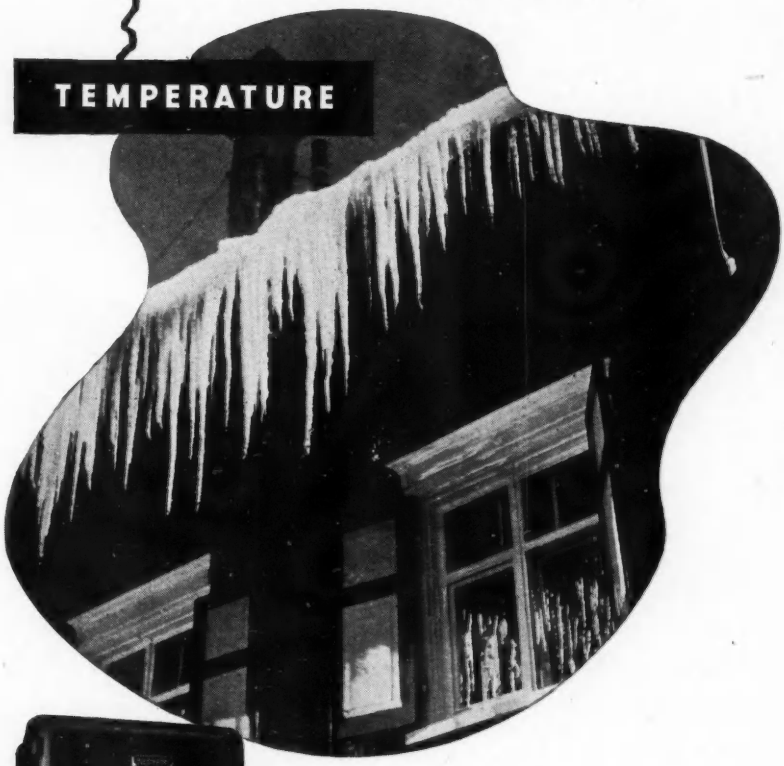

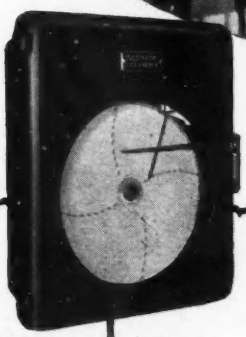

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Chemical & Allied Stocks & Shares

A VERY large volume of business has been transacted in stock markets, but after reaching new high record levels many industrial shares turned easier. Nevertheless there were widespread and substantial gains on balance for the month.

Chemical shares reflected the general trend in markets, and although best levels were not maintained, showed numerous gains as compared with a month ago. A very large business was transacted in Imperial Chemical, which were up to 38s. 4½d. at one time, but are now 37s. 4½d., which, however, compares with 35s. 4½d. a month ago. The forthcoming I.C.I. interim dividend is awaited with particular interest because it will be paid on the doubled Ordinary capital arising from the share bonus. Estimates in the market of the interim range from 3 per cent to 4 per cent and for the year's total from 9 per cent to 10 per cent. Borax Consolidated deferred units were a good feature with an advance on balance from 52s. 6d. to 56s. 9d. though the directors have warned that the bigger interim dividend should not be taken as indicating a larger total for the year. Laporte 5s. shares showed activity but later eased to 16s. 9d. and Monsanto 5s. shares did not hold best prices at 25s. 1½d. Reichhold 5s. shares were good with a rise from 10s. 3d. to 11s. 10½d., while Fisons gained 1s. 4½d. at 55s. 10½d., and British Chrome Chemicals shares have advanced on the month from 25s. to 28s.

Hickson & Welch Stronger

British Glues were 11s. 9d. 'ex' the capitalised bonus. Hickson & Welch 10s. shares strengthened from 14s. 6d. to 15s., Albright & Wilson 5s. shares were a firm feature at 24s. 10½d., and the 4s. units of the Distillers Co. were active around 22s. 6d., following Sir Henry J. Ross's review of the group's activities. There was less activity in William Blythe 3s. shares, which, however, were slightly higher on balance at 16s. 9d. Burt Boulton & Haywood were 30s. and Coalite & Chemical 2s. shares 3s. 6¼d. Compared with a month ago, British Xylonite have strengthened to 39s. British Industrial Plastics 2s. shares have not held best levels at 7s. 3d. Bakelite 10s. shares were well maintained at 26s. Gas Purification & Chemical 2s. shares were a lively market on the latest developments announced by the company, but were below the best at 30s. Unilever have been active and were 81s. 6d. compared with 80s. 3d. a month ago. In other directions Triplex Glass 10s. shares at 30s. have not held best levels despite the good impression created by the financial results. Boots Drug 5s. units were 26s. 10½d.

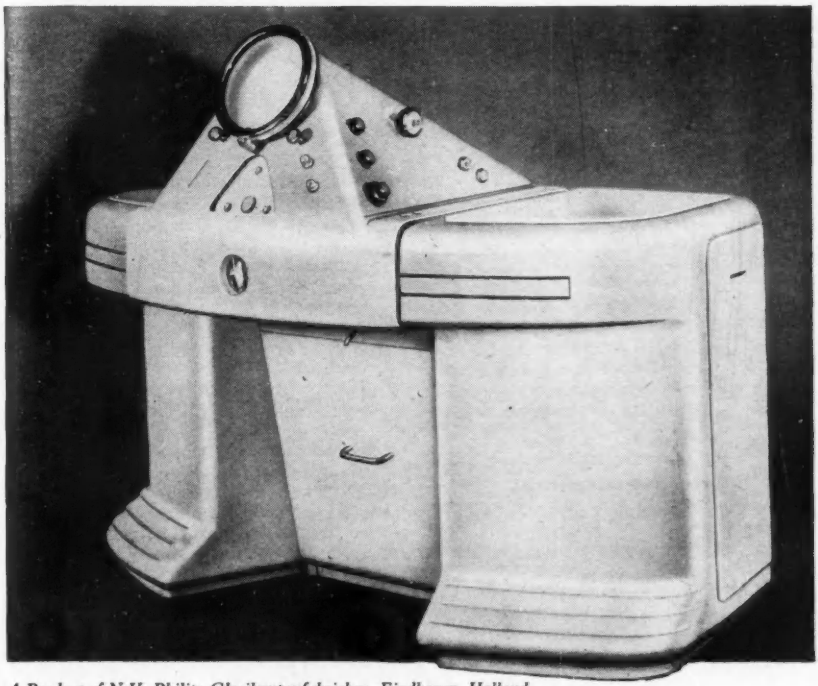
Powell Duffryn fluctuated and were 33s. 3d. awaiting the further statement promised by the directors. Staveley were 48s. 6d., British Aluminium eased to 35s. 6d. Guest Keen have risen from 59s. 10½d. to 63s. 6d. Turner & Newall were 86s. 9d., compared with 85s. 3d. a month ago. Oils provided active dealings, but profit-taking prevented best levels from being held. Anglo-Iranian jumped to £16¼ at one time on the Persian settlement, but are now £15½, which, however, compares with £13 a month ago. An official statement is expected shortly giving the amount of compensation the company is to receive from the other big oil groups which will be interested in Persian oil under the agreement. Burmah Oil have risen to 93s. 9d. in sympathy with Anglo-Iranian because of the company's large holding of Anglo-Iranian shares. Shell were 100s. compared with 97s. 6d. a month ago.

Fisons' New Canadian Interest

A CONTROLLING interest in Fine Chemicals of Canada has been acquired by Fisons Chemicals (a subsidiary of Fisons Ltd.) and Harrisons & Crosfield Ltd., Eastern and general import and export merchants, etc. Both companies have bought equal holdings in Fine Chemicals which has a capital of 1,000,000 shares of no par value. The purchase price is believed to be comparatively small, but both firms regard the investment as a stepping stone to the Canadian market.

Each already has interests in Canada, and Harrisons & Crosfield has acted as agents for Fine Chemicals and also as agent for some of Fison's products in Canada. Representing Fisons on the board of Fine Chemicals of Canada will be their commercial director, Mr. A. Wormald, as vice-president, and Mr. W. Abel Smith, a member of the staff who was recently appointed North American representative of the Fison group with offices in New York.

PHILIPS Electron Microscope



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Law & Company News

Commercial Intelligence

The following are taken from the printed reports, but we cannot be responsible for errors that may occur.

Mortgages & Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described herein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages or Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary but such total may have been reduced.)

CRONE & TAYLOR (FERTILIZERS) LTD, (now Crone & Taylor (Fertilisers) Ltd.), St. Helens. 19 July, debenture to Solicitor for HM Treasury securing all moneys due or to become due from the company to the chargee by reason of a guarantee dated 1 July, 1954; general charge.

New Registrations

Contabs Ltd.

Private company. (536,850.) Capital £1,000. Manufacturers of and dealers in drugs, medicines, chemicals, essences, essential oils, etc. The subscribers (each with one share) are: D. V. Jennings and Stanley J. Berwin. The holders of a majority of shares numbered 1-250, 251-500, 501-750 and 751-1,000, each have the right to appoint and remove one director, the first respective nominees being Anthony F. Cox, Francis W. Phillips, Bertold P. Wiesner and Herbert A. Cleary.

Solvents Ltd.

Private company. (15,188.) Capital £5,000. Manufacturers, packers and distributors of and dealers in bleach and all kinds of disinfectant, antiseptic and preservative substances, etc. Subscribers (each with one share): Robert C. McBride and Thomas R. R. King. The first directors are not named.

Company News

Distrene Ltd.

Last week we announced that a new British company, Distrene Ltd., was being formed to manufacture polystyrene and modified polystyrenes at Barry in South Wales. The Distillers Co. Ltd. will hold the controlling interest, but The Dow Chemical Company of the USA will have an interest and their patents will be used. It has now been announced that British Resin Products Ltd., a wholly owned subsidiary of Distillers, will be appointed sole selling agents for the new company. Major C. J. P. Ball, Mr. H. H. Woolveridge, Mr. P. A. Delafield and Dr. J. J. P. Staudinger will represent Distillers on the board of directors while the Dow directors will be Mr. N. R. Crawford, Dr. William H. Schuette and Mr. A. E. Young.

Borax Consolidated Ltd.

At a meeting of the board of Borax Consolidated Ltd. on 18 August the directors declared an interim dividend on the deferred ordinary stock of 4 per cent, less tax, to be paid on 22 September, 1954, for the year ending 30 September, 1954, as against a 2 per cent interim last year. The directors drew attention to the statement made by the chairman at the annual general meeting held on 17 March last, that an increase in the interim dividend must in no way be taken to foreshadow an increase in the total distribution. The interim payment is increased, as the 2 per cent paid for the last three years is considered to be small in proportion to the total yearly distribution.

The Distillers Company Ltd.

The accounts of The Distillers Co. Ltd. show that the profit of the group available for appropriation amounts to £7,292,299, against £4,386,630 last year, UK tax taking £9,805,472. Of this sum £1,772,157 has been retained by the subsidiary companies, leaving a balance to be dealt with in the accounts of The Distillers Co. Ltd. of £5,520,142. After transfer to general reserve and distribution of dividends, the balance to be carried forward is £2,039,495 (£1,806,120) for the company and £8,212,806 (£7,404,202) for the group. It is proposed to increase the final dividend on the ordinary shares by 1 1/5d. per share (2¼ per cent), making 1s. a share or 25 per cent for the year.

Aluminium Company of Canada

Consolidated net profits of the Aluminium Company of Canada, producing subsidiary of Aluminium Ltd., totalled $9,124,252 for the first six months of 1954, compared with $10,267,147 in the corresponding period of 1953.

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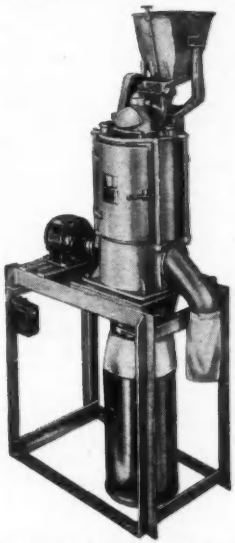

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CLASSIFIED ADVERTISEMENTS

EDUCATIONAL

UNIVERSITY OF MANCHESTER

THE NEXT SESSION COMMENCES ON THURSDAY, 7TH OCTOBER, 1954.

SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 *inclusive, or a woman aged* 18-59 *inclusive, unless he or she, or the employment, is excepted from the provisions of the Notifications of Vacancies Order*, 1952.

CHEMIST Wanted, fully qualified and experienced Industrial Oil Chemist. Should have knowledge of Metallurgy. Special superannuation scheme in operation. Apply, stating previous experience, salary required, etc., to **FISHER'S FOILS, LTD., EXHIBITION GROUNDS, WEMBLEY, MIDDLESEX.**

EXPERIMENTAL OFFICERS AND ASSISTANT EXPERIMENTAL OFFICERS in various Government Departments. The Civil Service Commissioners invite applications for pensionable posts. Applications may be accepted up to 31 December, 1954, but forms should be returned as soon as possible as an earlier closing date may be announced either for the competition as a whole or in one or more subjects. Interview Boards will sit at frequent intervals.

The posts are divided between following main groups and subjects :—(*a*) Mathematical and Physical Sciences; (*b*) Chemistry and Metallurgy; (*c*) Biological Sciences; (*d*) Engineering subjects; and (*e*) Miscellaneous (including e.g., Geology, Library and Technical Information Services).

AGE LIMITS.—For Experimental Officers, at least 26 and under 31 on 31 December, 1954; for Assistant Experimental Officers at least 18 and under 28 on 31 December, 1954. Extension for regular service in H.M. Forces.

Candidates must have at least one of a number of specified qualifications. Examples are: Higher School Certificate, General Certificate of Education, Scottish Leaving Certificate, Scottish Universities Preliminary Examination, Northern Ireland Senior Certificate (all in appropriate subjects and at appropriate levels), Higher National Certificate, University Degree. Candidates taking their examinations in 1954 may be admitted. Candidates without such qualifications may be admitted exceptionally on evidence of suitable experience. In general a higher standard of qualification will be looked for in the older candidates than in the younger ones.

SALARY (London) :—
Experimental Officer—£720-£890 (men); £625-£760 (women).
Assistant Experimental Officer—£290 (at age 18) to £645 (men); £545 (women).

Starting pay up to £520 (men), £490 (women). at 26, Somewhat lower outside London. Promotion prospects.

Further particulars and application forms from **CIVIL SERVICE COMMISSION, SCIENTIFIC BRANCH, 30, OLD BURLINGTON STREET, LONDON, W.1,** quoting **No. 894-95/54. 451/140/4/54/JS.**

SITUATIONS VACANT

CHEMICAL ENGINEER required by prominent Company in Westminster district. Qualifications required are: Age about 30; B.Sc. or equivalent; good knowledge Physics, Mathematics and Chemistry desirable; practical works experience of assistance; understanding of general office procedure and technical sales an advantage. The position offers excellent opportunities to a man having these qualifications, coupled with a keen business outlook. Write, stating fullest possible particulars, including age, qualifications and salary required, to **BOX No. C.A. 3347, THE CHEMICAL AGE, 154, FLEET STREET, LONDON, E.C.4.**

CHEMIST with good knowledge of Plastics Technology is required to take charge of small section, developing and investigating applications of cold- and thermo-setting resins to "potted" circuit techniques. Sound basic knowledge and organising ability are the primary requirements. The post is permanent and carries good salary and prospects. Please apply, in writing, to

PERSONNEL DEPT. (ED/190), E.M.I. ENG. DEV., LTD. HAYES, MIDDLESEX.

THE DISTILLERS COMPANY, LIMITED.

THE Company has a number of openings for **QUALIFIED SCIENTISTS** for research, development and production supervision, as a result of expanding programmes in the fields of Synthetic Organic Chemicals, Polymers, Antibiotics, Yeast and Industrial Alcohol.

Interesting and progressive positions are available in these fields for Chemists, Biochemists, Chemical Engineers or for specialists in Chemical Analysis, Spectroscopy, Micro-biology and Chemical Plant Instrumentation. The posts are tenable in the London, Cardiff, Liverpool and Hull areas, and good salaries are offered appropriate to a candidate's experience and qualifications. A non-contributory pension scheme is in operation.

Posts are available for graduates both with and without industrial experience, and may be of special interest to those who are shortly completing their National Service. Interested men and women are invited to apply to the **STAFF MANAGER, THE DISTILLERS CO., LTD., 21, ST. JAMES'S SQUARE, LONDON, S.W.1.** quoting Reference **DCL/G1.**

HER MAJESTY'S COLONIAL SERVICE

A VACANCY exists for a **CHEMIST,** Medical Department, Hong Kong. Age limits 35 years.

QUALIFICATIONS: Honours Degree of British University in Chemistry and/or Associateship or Fellowship of R.I.C.; three years post graduate experience.

DUTIES: Assist Government chemist analytical and consulting work concerned with public health; control of narcotic drugs, strategic materials, dangerous cargoes; commercial analytical work, toxicology, etc.

TERMS OF APPOINTMENT: Pensionable with salary in the scale £750-£1,406 p.a. plus pensionable overseas allowance of between £210-£280 p.a. A temporary non-pensionable cost of living allowance is also payable. Free passages once each way each tour; leave at rate of 1 day for every 7 days of resident service; quarters, if available, at rental of not more than one-eighth of basic salary; income tax at local rates.

Apply in writing to the **DIRECTOR OF RECRUITMENT, COLONIAL OFFICE, GREAT SMITH STREET, LONDON, S.W.1,** giving briefly age, qualifications and experience. Mention the reference number BCD.117/51/018.

SITUATIONS VACANT

SENIOR SCIENTIFIC OFFICERS; SCIENTIFIC OFFICERS; PATENT EXAMINER AND PATENT OFFICER CLASSES. The Civil Service Commissioners invite applications for pensionable appointments. Applications may be accepted up to December 31, 1954, but early application is advised as an earlier closing date may eventually be announced. Interview Boards will sit at frequent intervals. The Scientific posts cover a wide range of scientific research and development in most of the major fields of fundamental and applied science. In biological subjects the number of vacancies is small; individual vacancies exist at present for candidates who have specialised in Palaeobotany, Foraminifera, Malacology and Lichenology. The Patent posts are in the Patent Office (Board of Trade), and Ministry of Supply.

Candidates must have obtained a University Degree with First or Second Class Honours in an appropriate scientific subject (including Engineering) or in Mathematics, or an equivalent qualification; or for Scientific posts, possess high professional attainments. Candidates for Senior Scientific Officer posts must in addition have had at least three years' post-graduate or other approved experience. Candidates for Scientific Officer and Patent posts taking their degrees in 1954 may apply before the result of their degree examination is known.

AGE LIMITS.—Senior Scientific Officers, between 26 and 31, but specially suitable candidates under 26 may be admitted. For Scientific Officers and Patent Classes, between 21 and 28 during 1954 (up to 31 for permanent members of the Experimental Officer Class).

SALARY.—(London) Senior Scientific Officers: (men), £975-£1,150; (women), £845-£1,025. Scientific Officers: (men), £470-£855; (women) £470-£750. Patent Examiner and Patent Officer Classes (men), £440-£760, (rates under review). Women's rates somewhat lower. Somewhat lower rates in the provinces.

Further particulars from the **CIVIL SERVICE COMMISSION, SCIENTIFIC BRANCH, TRINIDAD HOUSE, OLD BURLINGTON STREET, LONDON, W.1,** quoting No. S/53/54 for Senior Scientific Officers and S.52/54, S.128/54 for other posts.

NATIONAL GALLERY. A vacancy exists in the laboratory for a Senior Scientific Officer (Chemist). Duties involve the analysis and testing of materials used in the Conservation Department, and assisting in the development of new techniques. An interest in chromatographic methods would be advantageous. Opportunities exist for research. The general qualifications and conditions are as set out in the main advertisement above. Candidates for this post should quote S.4363/53/54 and the closing date for applications is 23rd September, 1954. 2614/75/JLH/8/54.

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ONE BERTRAM TWIN ROLL FILM DRIER, with steam-heated rolls 60 by 28, complete with motor, starter, vapour hood, etc. In first-class condition.
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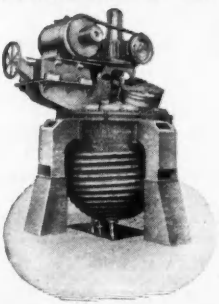

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INDEX to advertisers in this issue

	Page
Accrington Brick & Tile Co., Ltd.	404
Adequate Weighers Ltd.	410
Alumina Co., Ltd. (The)	Cover iii
Ames Crosta Mills & Co., Ltd.	406
Baird & Tatlock (London) Ltd.	437
Baker Perkins, Ltd.	403
Bamag (1953) Ltd.	409
Bowmans Chemicals Ltd.	448
Braby, Fredk., & Co., Ltd.	408
British Acheson Electrodes, Ltd.	405
British Ceca Co., Ltd.(The)	447
British Electrical Development Association	401
Brotherhood, Peter Ltd.	397
Browns Foundry Co., Ltd.	Cover ii
Callow Rock Lime Co., Ltd. (The)	Cover iii
Chemitrade Ltd.	Cover ii
Classified Advertisements	444, 445, 446
Dunlop Rubber Co., Ltd.	399
Farnell Carbons Ltd.	448
Feltham, Walter H., & Son Ltd.	447
Foyle, W. & G., Ltd.	447
Glebe Mines Ltd.	407
Kestner Evaporator & Engineering Co., Ltd.	412
Laporte Chemicals Ltd.	410
Leeds & Bradford Boiler Co., Ltd.	446
Mallinson & Eckersley Ltd.	448
Metal Containers Ltd.	Front Cover
Mirvale Chemical Co., Ltd.	Cover iii
National Enamels Ltd.	Cover iii
Negretti & Zambra Ltd.	439
Pascall Engineering Co., Ltd.	443
Paterson Engineering Co., Ltd. (The)	412
Philips Electrical Ltd.	441
Pott, Cassels & Williamson	402
Powell Duffryn Carbon Products Ltd.	Cover iv
Sandiacre Screw Co., Ltd.	402
Spencer Chapman & Messel Ltd.	408
Staveley Iron & Chemical Ltd. (The)	404
Steel, J. M., & Co., Ltd.	443
Towers, J. W., & Co., Ltd.	400
Whitaker, B., & Sons Ltd.	Cover ii
Widnes Foundry & Engineering Co., Ltd.	398
Wilkinson, James, & Son Ltd.	407
Yorkshire Tar Distillers Ltd.	406

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